EVALUATION OF MANNHEIM PERITONITIS INDEX AS PREDICTOR OF OUTCOME IN PATIENTS WITH PERFORATION PERITONITIS

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Submitted By

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DECLARATION BY THE CANDIDATE

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Dedicated

to

My Family &

My Teachers

ACKNOWLEDGEMENT

"AUDERE EST FACERE- TO DARE IS TO DO"

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Dr .Arshdeep Singh Rekhi

ABBREVIATIONS

MPI	MANNHEIM PERITONITIS INDEX
mg	MILLIGRAM
ml	MILLILITRE
mmHG	MILLIMETERS OF MERCURY
CBC	COMPLETE BLOOD COUNT
RFT	RENAL FUNCTION TEST
LFT	LIVER FUNCTION TEST
PTI	PROTHROMBIN TIME
INR	INTERNATIONAL NORMALIZED RATIO
ABG	ARTERIAL BLOOD GAS
ECG	ELECTROCARDIOGRAM
AKI	ACUTE KIDNEY INJURY
CECT	CONTRAST ENHANCED COMPUTED TOMOGRAPHY
MRI	MAGNETIC RESONANCE IMAGING
USG	ULTRASOUND SONOGRAPHY

ABSTRACT

INTRODUCTION: Peritonitis owing to hollow viscus perforation remains one of the surgical emergencies. which is considered to be the life threatening condition. Early prognostic assessment of abdominal sepsis is suggested to identify high-risk patients for more aggressive treatment interventions and to categorize the severity of the disease. Categorising patients into different risk groups would help prognosticate the outcome, select patients for intensive care and determine operative risk, thereby helping to choose the nature of the operative procedure.

AIM OF STUDY: To evaluate predictability of Mannheim Peritonitis Index in patients with perforation peritonitis.

METHOD OF COLLECTION OF DATA

A hospital based prospective observational study was conducted on 100 patients presenting to Dayanand Medical College and Hospital, Ludhiana who underwent surgery for perforation peritonitis. In the present study Mannheim Peritonitis Index was used to predict the outcome in the patients of perforation peritonitis. Among all the variables of MPI, following observation were made in present study. Prediction was categorised into 3 groups :

- Score≤20- CATEGORY A
- Score 21-29- CATEGORY B
- Score ≥30 - CATEGORY C

INCLUSION CRITERIA:- Patients having >18years of age with diagnosis of perforation peritonitis.

EXCLUSION:-

- Patients with age less than <18 years
- Primary peritonitis

RESULTS: Higher scores associated with a worse prognosis and need intensive therapy, making the use of MPI in clinical practice important and useful, particularly in resource-poor settings.

CONCLUSION: All risk factors included in the Mannheim Peritonitis index namely, presence of organ failure; age>50 years, generalised extension of peritonitis and type of exudate has significant association with adverse outcome (mortality) in present study**.**Our study differs from MPI regarding gender. The mortality rate among male and female was non significant statistically. Preoperative duration of peritonitis and origin of sepsis(colonic/non colonic) was also not a risk factor as we could not find significant results. We also could not relate MPI index with malignancy as a risk factor as there was only one case with malignancy and perforation peritonitis and this case survived.

Keywords: Prospective study, MPI, perforation peritonitis, outcomes.

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INTRODUCTION

Peritonitis is described as the inflammation of the serosal membrane that borders the abdominal cavity and various organs located inside it. The peritoneum, an otherwise sterile environment, reacts to various pathologic stimuli with a uniform inflammatory response.[1] in most cases peritonitis results in the invasion of the peritoneal cavity by the bacteria, hence the term peritonitis indicates acute bacterial peritonitis.[2] Primary peritonitis results in invasion of abdominal cavity of the patients with pre existing ascites and secondary peritonitis is due to the invasion of peritoneal cavity by organisms from the perforation of hollow viscus in the abdomen.[3] There is no single, easily available laboratory test that predicts severity or prognosis in patients with peritonitis.[4] Secondary peritonitis due to perforation of hollow viscus is the most common surgical emergency encountered in operation theatre and the most common age group involved in this disease is the young age group as compared to the western population whose mean age of perforation peritonitis is between 40-60 years of age.[5]

The varied character of abdominal surgery infections makes it difficult to clearly identify the condition, estimate its severity, and track its course. Both the anatomic source of infection and, to a greater extent, the physiologic damage it causes influence the outcome. The systematic method to assessing sickness in critically ill patients with peritonitis is a recent phenomena. Early and objective classification of the severity of peritonitis may help in selecting patients for aggressive surgical approach.

High-risk patients require quick and aggresive treatment, especially in acute peritonitis, and to select them fairly accurately; assessment using prognostic scoring is a recommended strategy.

Early prognostic evaluation is desirable to be able to select high-risk patients for more aggressive treatment, especially in severe

peritonitis.[1] The prognosis and outcome of peritonitis depends upon the interaction of many factors including patient-related factors, disease-specific factors and diagnostic and therapeutic interventions. Categorizing patients into different risk groups would help prognosticate the outcome, select patients for intensive care and determine operative risk, thereby helping to choose the nature of the operative procedure.[6] Numerous scoring systems have been suggested to ascertain the predicted risk variables associated with mortality caused by perforative peritonitis. However, these scores often exhibit complexities in their calculation or limitations in their applicability outside the confines of critical care units. The primary score systems that have been documented include the Acute Physiology and Chronic Health Evaluation score (APACHE II), Simplified Acute Physiology Score (SAPS), Sepsis Severity Score (WSES), Ranson Score, Peritonitis Index Altona (PIA), Sepsis Score, and Physiological and Operative Severity Score for Enumeration of Mortality and Morbidity (POSSUM).[7,8] The MPI is one of the simplest scoring systems in use that allows the surgeon to easily determine risk during initial surgery. It is a disease specific score based on easy to handle clinical parameters. The recollection of retrospective data is possible and valid, because MPI only requires information routinely found in surgical registers. It takes into account age, gender, organ failure, cancer, and duration of peritonitis, involvement of colon and extent of spread and character of peritoneal fluid.[9]

The Mannheim periMPI was originally derived from data collected from 1253 patients with peritonitis treated between 1963 and 1979, and was developed by Wacha through discriminant analysis of 17 possible risk factors, 8 of which were prognostic, and is now widely used to predict mortality from peritonitis. The information is collected at the time of admission and first laparotomy.[10]

TABLE 1: MANNHEIM PERITONITIS INDEX

CRITERIA	SCORE
AGE >50	5
FEMALE GENDER	5
ORGAN FAILURE	7
MALIGNANCY	4
PREOPERATIVE DURATION OF PERITONITIS >24HOURS	4
ORIGIN OF SEPSIS NON COLONIC	4
DIFFUSE GENERALIZED PERITONITIS	6
PERITONEAL FLUID ANALYSIS	
CLEAR	0
CLOUDY/PURULENT	6
FECAL	12

TABLE 2: CRITERIA FOR ORGAN FAILURE

ORGAN	CRITERIA
KIDNEY :	
CREATININE LEVEL	>177 MICROMOLE/ LITRE (>2.31MG/100ML)
UREA LEVEL	>167 MMOL/LITRE (>467.78MG/ 100ML)
OLIGURIA	<20ML/HOUR
LUNGS:	
PAO2	<50 MMHG
PACO2	>50MMHG
SHOCK	HYPODYNAMIC or HYPERDYNAMIC
INTESTINAL OBSTRUCTION (ONLY IF PROFOUND)	WITH PARALYTIC ILEUS >24HOURS OR COMPLETE MECHANICAL OBSTRUCTION

AIM AND OBJECTIVE

- To evaluate predictability of “Mannheim Peritonitis Index” in patients with perforation peritonitis.

REVIEW OF LITERATURE

Various scoring systems are used to predict the prognosis in patients with peritonitis. These scoring systems can be a good tool to predict and hence to monitor the priority of treatment for better care in case of peritonitis. Moreover, performing a risk analysis for cases by detecting the prognostic factors that affect morbidity and mortality may help prognosis prediction. Along with the predictive factors affecting the morbidity and mortality of cases, scoring systems have also been developed with parameters including demographic and clinical features. Here, we assessed the utility of one such scoring system that is, Mannheim peritonitis index (MPI) score system in predicting the outcome of patients with perforation peritonitis.

ANATOMY OF THE PERITONEUM AND PERITONEAL CAVITY

The peritoneum is a serous membrane that surrounds the abdominal cavity. Mesothelial cells are supported by a thin layer of fibrous tissue and originate from the mesoderm. It is constructed of two layers. The outer layer is the parietal peritoneum, which attaches to the abdominal and pelvic walls. The inner visceral layer wraps around the internal organs located inside the intraperitoneal space.[11]

BOUNDARIES OF THE PERITONEAL CAVITY

The boundaries of the peritoneal cavity include:

- Anterior :Anterior abdominal muscles
- Posterior: Vertebrae
- Inferior: Pelvic floor
- Superior: Diaphragm

The “peritoneal cavity” is subdivided into interconnected compartments or spaces by 11 ligaments and mesenteries. The peritoneal ligament and mesenteries includes the coronary, gastrohepatic, hepatoduodenal, falciform, gastrocolic, duodenocolic, gastrosplenic, spenorenal, and phrenocolic ligaments and the

transverse mesocolonand small bowel mesentry.

These structures partition the abdomen into nine potential spaces viz.

1. Right subphrenic
2. Left subphrenic
3. Subhepatic
4. Supramesocolic
5. Inframesocolic
6. Right paracolic gutter
7. Left paracolic gutter
8. Pelvis
9. Lesser sac

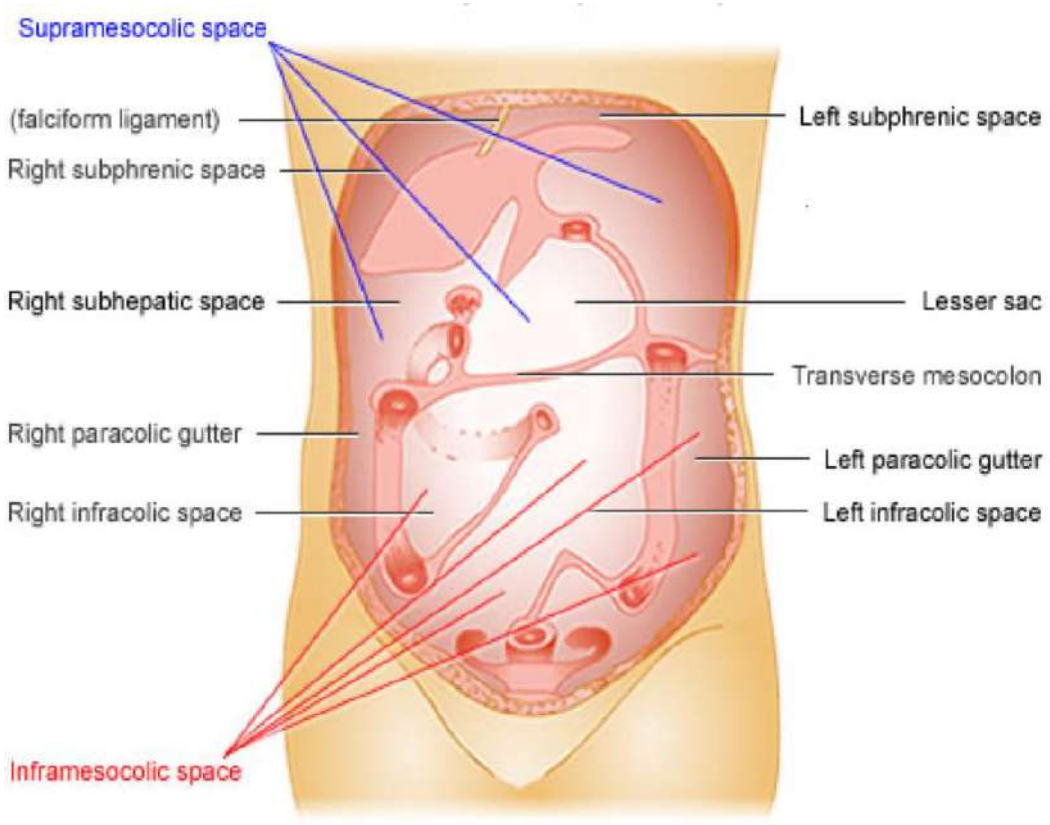


FIGURE 1: VARIOUS PERITONEAL SPACES

EMBRYOLOGY

The peritoneum, which is made up of mesoderm, serves to keep the primitive gut tube in place throughout development. The visceral peritoneum develops from the splanchnic mesoderm, whereas the parietal peritoneum develops from the somatic. Mesenteries are peritoneal extensions that act as anchors between the anterior and posterior abdominal walls. The ventral mesentery eventually develops into the lesser omentum, which may be further characterized as the gastrohepatic and hepatoduodenal ligaments, which contain the portal triad and play a clinical function in potential hemorrhage & management in trauma. The dorsal mesentery remains as a mesentery, and gives off the gastrosplenic ligament, greater omentum, and helps keep midgut and foregut organs anchored to the posterior abdominal wall.[12]

BLOOD SUPPLY AND LYMPHATICS

Blood supply to the parietal peritoneum is provided by the iliac, lumbar, epigastric, and intercostal arteries originating from the abdominal wall vasculature. On the other hand, the visceral peritoneum receives blood from the inferior and superior mesenteric arteries. Venous drainage differs between the two parts: the parietal peritoneum drains into the inferior vena cava, while the visceral peritoneum drains into the portal vein.[13]

NERVE SUPPLY

The peritoneum is innervated by both somatic and autonomic nerves, contributing to the manifestation of abdominal conditions like peritonitis or appendicitis. The parietal peritoneum receives innervation from spinal nerves T10–L1, enabling specific sensations of pain and temperature in this region. Autonomic innervation from the Vagus nerve and sympathetic innervation from the visceral peritoneum cause the difficult-to-localize abdominal symptoms caused by organ.[12,14]

FUNCTIONS OF THE PERITONEUM

In health

- Visceral lubrication
- Fluid and particulate absorption

In disease

- Pain perception (mainly parietal)
- Inflammatory and immune

RESPONSE OF THE PERITONEUM TO INFECTION

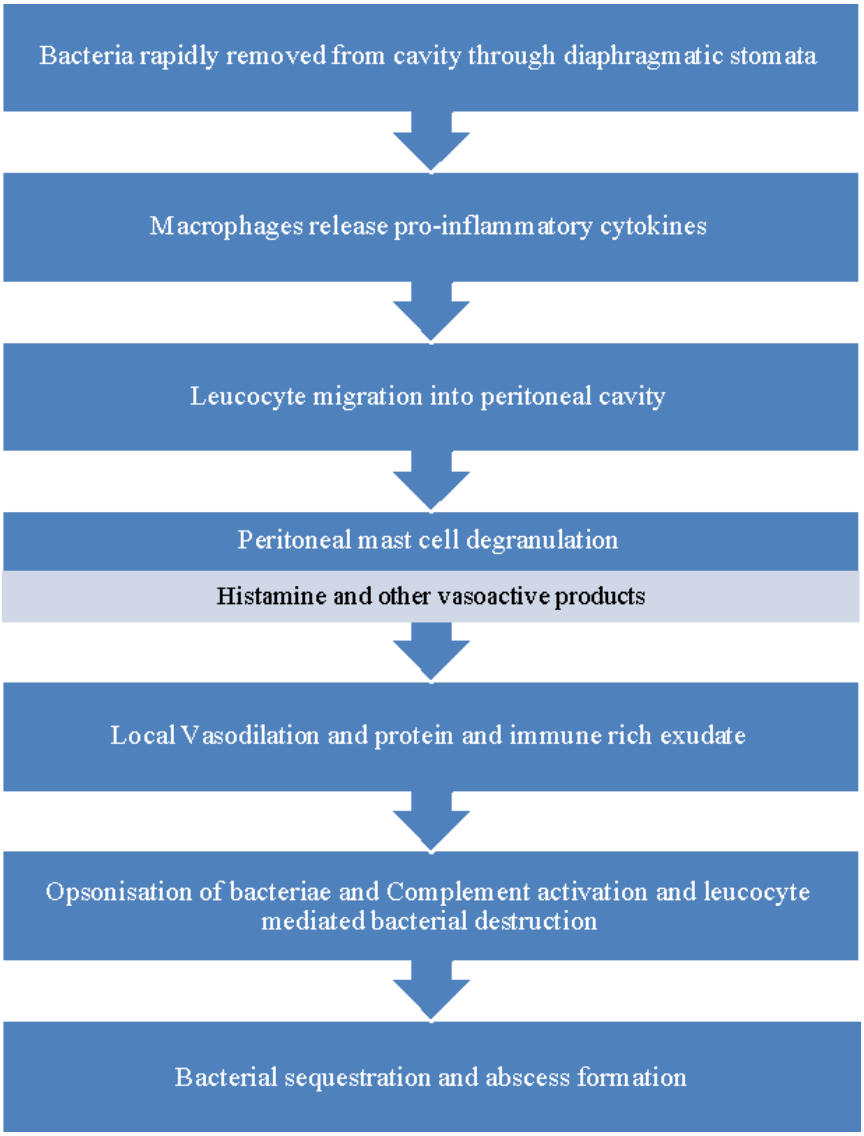
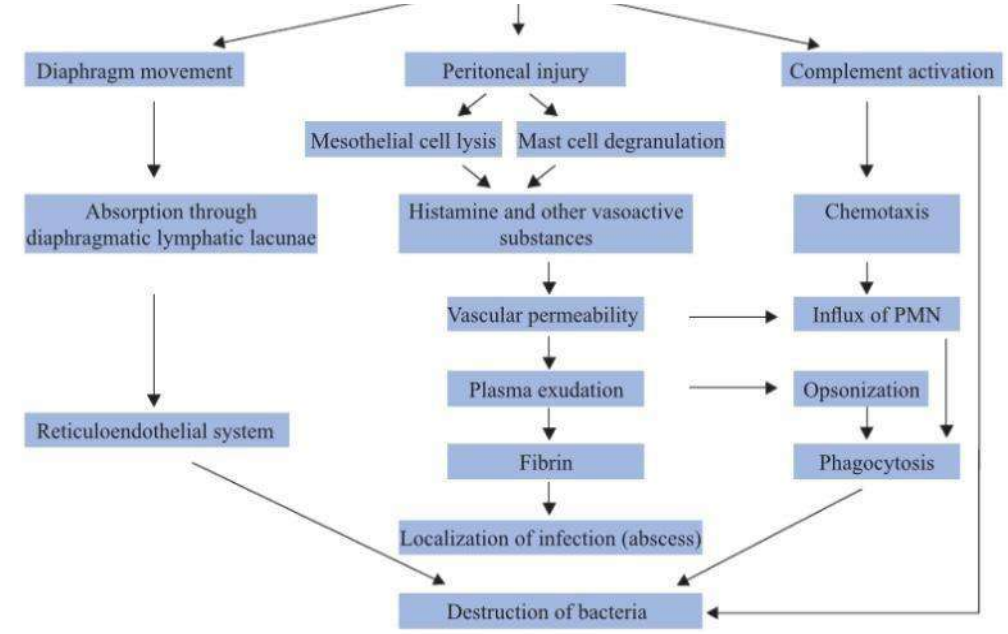

Bacteria rapidly removed from cavity through diaphragmatic stomata
Macrophages release pro-inflammatory cytokines
Leucocyte migration into peritoneal cavity
Peritoneal mast cell degranulation
Histamine and other vasoactive products
Local Vasodilation and protein and immune rich exudate
Opsonisation of bacteriae and Complement activation and leucocyte mediated bacterial destruction
Bacterial sequestration and abscess formation

FIGURE 2: RESPONSE OF PERITONEUM TO INFECTION

Intraabdominal infection results from perforation of hollow organs leading to inoculation of bacteria into a normally sterile peritoneal cavity. Intraabdominal infection results from perforation of hollow organs leading to inoculation of bacteria into a normally sterile peritoneal cavity. Intraabdominal infection results from perforation of hollow organs leading to inoculation of bacteria into a normally sterile peritoneal cavity Intraabdominal infection results from perforation of hollow organs leading to inoculation of bacteria into a normally sterile peritoneal cavity. Macrophages are pluripotent cells that play a central role in coordinating the overall infammatory response. They secrete proinfammatory cytokines, such as tumor necrosis factor (TFN-α), interleukin-1 (IL-1) and interleukin-6 (IL-6), which enhance the microbicidal properties of other phagocytic cells within the surrounding milieu, and attract additional phagocytic cells to the site of invasion and infections (Lopez et al., 2011). Macrophages also act as cells that process and represent components of the pathogen to T-helper cells, resulting in activation of the adaptive immune response. The final route of all these event is the killing of bacteria, the elimination of foreign materials and the reestablishment of normal physiology and anatomy. Bacterial killing or cytotoxicity can be achieved through oxygen free radicals, nitric oxide, cytotoxic lymphocytes, proteins that increase bacterial permeability, cathepepsin, lactoferrin, lysosomes, proteases, lipid hydrolases and kinases.[15]



CLINICAL MANIFESTATIONS OF PERITONITIS

- Sudden onset of pain which is severe.
- Fever
- Vomiting
- Tenderness-initially localised later becomes diffused.
- Rebound tenderness Blumberg sign.
- Guarding and rigidity, dull flanks on percussion.
- Tachycardia
- Tachypnea
- Distension with silent abdomen.
- Eventually leading to Hippocrates facies, septicaemic shock and loss ofconsciousness.

Bowel sounds are absent due to paralytic ileus. Fever may be absent in severe peritonitis due to loss of pyrogenic reaction. Total count also may be very low in severe peritonitis. APACHE II (Acute Physiology and Chronic Health Evaluation [using 12 physiological variables]) and Mannheim peritonitis index (8 parameters) scoring systems are used to assess the severity and predicting the outcome in peritonitis

INVESTIGATIONS

Peritonitis is mainly a clinical diagnosis and we shouldn't postpone emergency surgical intervention just for the want of investigations.

- **BLOOD INVESTIGATIONS**

1.Complete blood count will show neutrophilic leucocytosis.
2.RFT elevation may show the degree of dehydration and presence of AKI.
3.Electrolyte values guide us in fluid resuscitation along with RFT values.
4.Liver function tests- moderate elevation occur in sepsis as it is one of the earlymarker of sepsis.
5.Serum amylase – while very high values of amylase such as above 1000 may point to acute pancreatitis, moderate elevation can also occur in perforation peritonitis.
6.Arterial blood gas shows a metabolic acidosis, often preceded by a lowarterial carbon dioxide tension caused by hyperventilation.
7. Grouping and cross matching of blood.

- **RADIOLOGICAL INVESTIGATIONS**

A. **X-RAY**: X—Ray abdomen in standing position (erect) will show ground glass appearance of the abdomen with gas under diaphragm suggesting hollow viscous perforation. Left lateral decubitus X-Ray is very useful in very critical patient where patient cannot be made to stand in erect posture. It should be differentiated from the rare Chilaiditi syndrome wherein interposition of bowel in front and above the liver looks radiologically like gas under diaphragm.

FIGURE 3: X-RAY ABDOMEN ERECT VIEW SHOWING FREE AIR UNDER THE RIGHT DOME OF DIAPHRAGM. S/O PNEUMOPERITONEUM. DUE TO HOLLOW VISCUS PERFORATION

B. **U/S ABDOMEN**—shows fluid in the abdominal cavity. Also clinches other causes like haemoperitoneum and pancreatitis.

C. **CT scan** is useful to confirm the cause or to rule out conditions like pancreatitis. CT scan detects bowel ischaemia, gangrene, perforation, internal hernias and quantity of pus/fluid in the peritoneal cavity.

D. **MRI** is reliable in identifying intra-abdominal abscess.

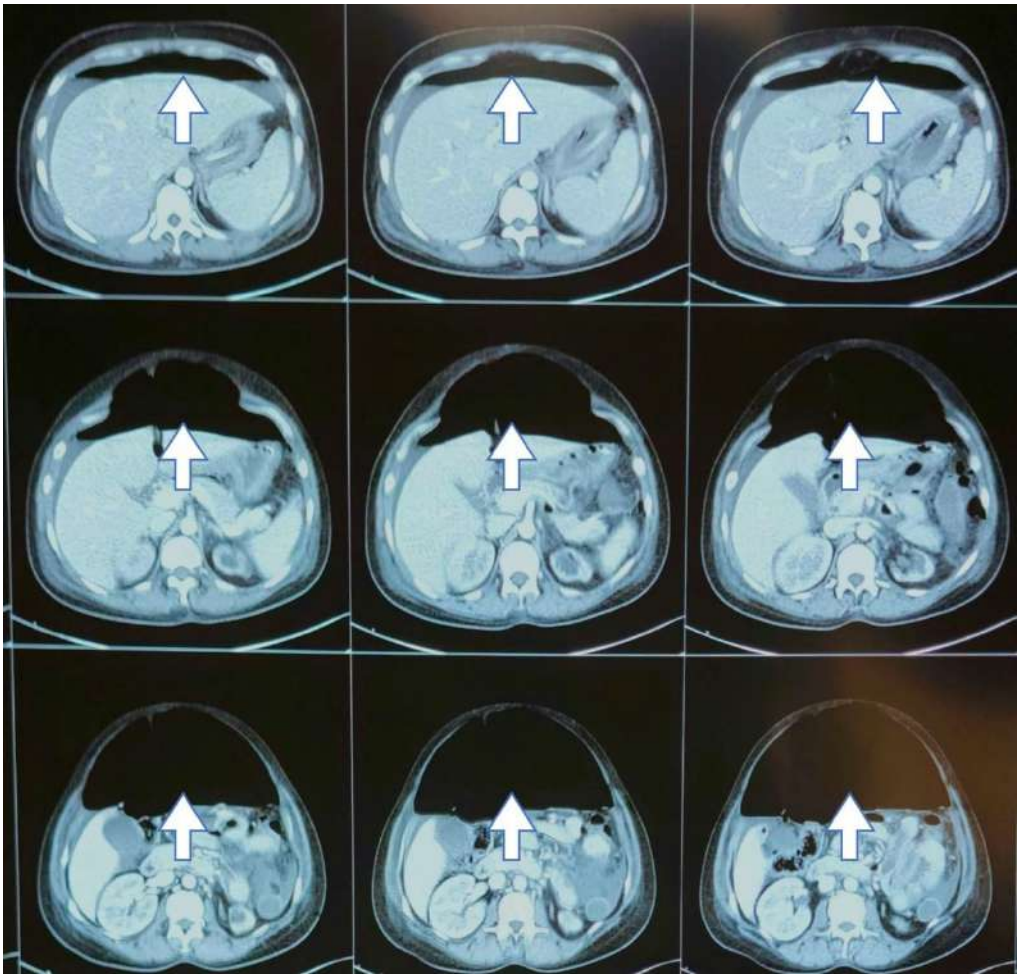


FIGURE 4: CECT WHOLE ABDOMEN SUGGESTIVE OF SIGNIFICANT PNEUMOPERITONEUM (MARKED WITH WHITE ARROWS) SECONDARY TO HOLLOW VISCUS PERFORATION.

MISCELLANEOUS:

- **FOUR QUADRANT ABDOMINAL TAP—**reveals pus or infected fluid. In suspected pancreatitis fluid should be analysed for amylase level (which will be high). Often US guided aspiration is better and more accurate. Fluid collected should be sent for culture.
- **DIAGNOSTIC PERITONEAL LAVAGE (DPL)**. DPL with more than 500 WBCs/ml suggests peritonitis; fluid should be assessed for pH, sugar, protein, LDH, cell count, Gram stain, culture. Fluid is analysed for amylase or bilirubin or creatinine in suspected cases of pancreatitis or biliary leak/peritonitis or urinary leak. pH (<7.0) and glucose (<50 mg/dl) of aspirated fluid will be low in bacterial peritonitis but will show raised protein and LDH (greater than serum LDH).
- **DIAGNOSTIC LAPAROSCOPY*.*** It can also be used as therapeutic for duodenal ulcer perforation or primary peritonitis to give peritoneal wash.

MANAGEMENT PRINCIPLES OF PERITONITIS

One of the principal aims in management of peritonitis is bringing under Control, the primary source of sepsis. The use of peritoneal irrigation has not shown any positive evidence, probably because the bacteria in the peritoneum are resistant to lavage, or more so because of the danger of harm caused on the peritoneal mesothelium. Removal of debris, faecal or purulent exudates must be the primary aim. Mass closure of the abdomen is undertaken using interrupted or continuous monofilament sutures. It is advisable to continue broad spectrum antibiotics for at least a period of five to seven days postoperatively in cases of generalized peritonitis. Secondary peritonitis Patients with continuing or worsening sepsis even after primary surgery will require a re-laparotomy for clearance of sepsis. Relaparatomies may be performed as and when the condition warrants, or in a more aggressive manner wherein the

relaparotomy is planned to be done at a regular interval during the initial procedure itself. If a relaparotomy is planned for, then instead of closing the abdomen, it is left open with a sheet of mesh insitu to prevent evisceration. Modifications are “primary open management”, and “semi-open approachessuch as staged abdominal repair”.
However, evidence from recent studies have shown that survival benefits are 31 better in the patients managed by on-demand relaparotomy than in those treated by planned relaparotomy. Continued clinical monitoring with CT imaging as and when required, is the key to time the re laparotomy and to select the patients who would require an “on demand relaparotomy”. Even for many of the septic patients performing poorly in the postoperative period may not require are laparotomy but rather require ICU monitoring and care and prolonged antibiotics and organ support. It couldn`t be stressed enough the importance of removing the source of sepsis during the primary procedure itself and proper peritoneal lavage/toileting plays an important role in it. Besides, each and every repeat procedure done on the patient increases chances of his/her morbidity and mortality manifold.

LAPAROSCOPY:

The danger of hypercapnia and septic shock associated with laparoscopy in an inflamed peritoneum stems from the potential for systemic absorption of carbon dioxide and endotoxins into the circulation. However, they haven't been validated yet. Rather, laparoscopic management has proven to be a useful approach for managing both acute appendicitis and peptic ulcer perforation. In situations of colonic perforation, laparoscopy is an option, although it should be noted that there is a high conversion rate to laparotomy. Shock and significant ileus are contraindications to laparoscopy. Intra-abdominal drains are a good way to drain a small area or collection, but they can't be relied upon to empty the whole peritoneal cavity since they rapidly shut off.

Surgical outcomes, including mortality, survival, complications, and long-term morbidity, are not primarily determined by the surgeon's talents. The patient's physiological status, the disease that requires surgical correction, the nature of the operation and the pre operative and post operative support services have a major effect on the ultimate outcome.[16] The systematic approach to quantifying illness in critically ill patients like peritonitis is a recent phenomenon.[17] Early and objective classification of the severity of peritonitis may help in selecting patients for aggressive surgical approach.

In a research, Ajaz Ahmed and colleagues (Mannheim Peritonitis Index and APACHE-II-prediction of outcome in patients with perforation peritonitis). The patients were classified into three groups based on their MPI scores: MPI scores of 15 or less, 16 to 25, and 25 or more. The difference between the groups was statistically significant (p 0.05), with the total mean MPI score for survivors being 18.4 (interquartile range: 10-31) and the mean score for non-survivors being 32.12 (interquartile range: 31-47). Patients with scores under 15 did not pass away. For the 75 patients scoring 16-25, the mortality was 4%, but the rate increased to 82.3% when the score was more than 25. While studying the individual mortal- ity rates based upon the etiology, it was noted that all patients with colonic perforations had high MPI scores (>25) and a high mortality.[6]

MPI scores were categorized into three groups by Rajesh Sharma et al. in their study: 15 (category 1), 16–25 (category 2), and >25 (category 3). (category 3). In MPI category 3, the death rates were greater. It was shown that the difference in mortalities between MPI score groups was significantly significant (P 0.0001).[2]

In their study entitled "MANNHEIM PERITONITIS INDEX AS AN EVALUATIVE TOOL IN PREDICTING MORTALITY IN PATIENTS OF PERFORATION PERITONITIS," Batra et al. discovered that

patients with an MPI score of 20 or less had a 0% mortality rate, those with a score of 21 to 29 had a 3.85% mortality rate, and those with a score of 30 or higher had a 20% mortality.[9]

The effectiveness of the “Mannheim Peritonitis Index (MPI) “Score in Patients with Secondary Peritonitis was studied by Muralidhar et al. On 50 patients, a prospective research was done. From November 2011 to May 2013, a prospective research including 50 patients was carried out at the JSS Medical College Hospital in Mysore, Karnataka, India. Predictions were divided into three groups: I score 20, ii) score 21–29, and iii) score 30. As and when required, further resuscitation and ICU care were provided. Postoperatively, patients were monitored until the result, such as death, morbidity, or discharge. In this study, the survival rate was 95% for MPI scores under 20, 86% for MPI scores between 21 and 29, and only 50% for MPI scores beyond 30.[18]

Another study conducted by Sanjeev Sharma et al on fifty cases with diagnosis of peritonitis coming to Government Medical College, Amritsar found that Mortality steadily increases with increase in MPI score. For patients with a score <21, the mortality rate was 0%; for score 21–27, it was 27.28%; and for score >27, it was 100% (P < 0.001). For those patients who have a score <21, the morbidity rate was 13.33%; for score 21–27, it was 65.71%; and for score >27, it was 100% (P< 0.001). This study proved that MPI scoring system is a simple and effective tool for assessing the morbidity and mortality in patients with peritonitis.[19]

Patients with MPI 0-10 and 11-20 did not experience any mortality, according to a study by Anand Mishra et al. Seven (22.5%) patients out of thirty one with a score of 21 to 30 died. In contrast, a total of 22 (50.0%) patients out of 44 patients with MPI >30 passed away. Higher MPI scores were associated with significantly higher mortality (p 0.001) after statistical analysis of the data.[4]

Paul TriniTy Stephen et al. found that patients with peritonitis had a significantly higher MPI Score. 47 was the maximum score. Patients with MPI scores more than 27 were at a higher risk of wound infection, wound dehiscence, reoperation, intra abdominal collection, anastomotic leak, dialysis, and mechanical ventilation lasting more than 48 hours.[20]

In a study titled "Prediction of outcome using the Mannheim Peritonitis Index," Billing A et al. found that the mean death rate for patients with a score under 21 was 23% (range 0–11%), for scores between 21 and 29, 22.5% (range 10–6–50%), and for scores beyond 29, 59.1% (range 41– 87%). The average index score and average death rate were associated among the several groups, indicating a uniform approach to peritonitis treatment. For patients with peritoneal inflammation, the Mannheim Peritonitis Index offers a simple and trustworthy method of risk assessment and categorization.[21]

In their study “Evaluation of Mannheim Peritonitis Index and Multiple Organ Failure Score in Patients with Peritonitis”, Notash AY et al. The MPI and MOF scores were prospectively examined in 80 consecutive patients with peritonitis who received the same surgical treatment. For the MPI and other patient characteristics, risk ratios were determined. The MOF score could not be calculated with a risk ratio. Overall in-hospital mortality rate was 17.5%, including 80% of patients with MPI>29. In non- survivors the mean score was 4.8 (SD 1.46) and 33.07 (4.81) for the MOF score and MPI, respectively. Survivors had mean MOF score of 0.28 (0.20) and mean MPI of 19.39 (6.68). Their conclusion was that the MPI and MOF score provide simple and objective means to predict the outcome of patients with peritonitis.[22]

Kumar Gaurav et al 2024 did an observational cross-sectional study at the Department of General Surgery, Rajendra Institute of Medical

Sciences, Ranchi, and involved 111 patients with peritonitis owing to hollow viscus perforation from December 2021 to March 2022. The total mortality rate was 31 (28%). Mortality was the lowest in the low-risk group (MPI <21) at 1/30 (3%) and the highest in the high-risk group (MPI >29) at 18/40 (45%). In the intermediate-risk group (MPI 21-29), mortality stood at 12/41 (29%). A statistically significant association with mortality was observed ($p < 0.05$). Mortality was higher in patients presenting after 24 hours, having organ failure, and non-colonic sepsis.[23]

Sreedath, M et al 2021 conducted A single-group cohort study between August 2019 and August 2020, involving 175 patients suspected of having hollow viscus perforation and undergoing surgery at a tertiary care facility. Patients were categorised into three categories based on their MPI score, which indicated illness severity: MPI <21, 21-29, and >29. The most prevalent perforations were appendicular (37.7%), followed by stomach (30.9%) and duodenum (18.3%). Mortality rates varied based on the MPI score, with scores <21 having 0% mortality, scores 21–29 having 4.5% mortality, and scores >29 associated with an 87% mortality rate ($P < 0.001$). Patients with postoperative complications like surgical site infections (SSI), pneumonia, and enterocutaneous fistula had MPI scores >29 ($P < 0.001$). A sensitivity of 78% and specificity of 84.86% were reported for an MPI score of 25, with a positive likelihood ratio of 7.93 and a negative likelihood ratio of 0.303.[24]

C. G. Nwigwe et al 2007 conducted a comprehensive study on evaluation of the "Mannheim Peritonitis Index (MPI)" as a dependable and feasible method for evaluating patients with perforation peritonitis. A total of 67 consecutive patients diagnosed with generalized peritonitis were included in the study. The clinical information, along with the MPI score for each patient, was systematically collected and recorded manually following surgical procedures. The MPI was categorized into three groups: Group I

(MPI < 20), Group II (MPI 20-29), and Group III (MPI > 30), with each category being associated with mortality rates and the duration of hospital stay for survivors was considered as a measure of morbidity. The average MPI score for patients who did not survive was found to be 30.6, whereas those who survived had an average score of 19.7. The study revealed a 92.3% mortality rate among patients with an MPI score exceeding 30. A score of 25 was identified as providing the highest level of accuracy and should be utilized as a threshold for predicting a poor prognosis within our environment. The Mannheim Peritonitis Index (MPI) emerged as a straightforward and dependable scoring system that can be effectively applied in our setting. A score of 25 is considered a threshold above which the presenceof severe peritonitis should be anticipated.[25]

Abraar et al. (2005) studied 126 patients who came to the department with secondary peritonitis. Every patient's MPI score was calculated using a pre-made proforma, and they were monitored until they passed away or were discharged from the hospital.The mortality rate was 4.3% for MPI values less than 26 and 28.1% for levels greater than or equal to 26. For MPI scores < 20 mortality rate was 1.9%, for scores 21-29 it was 21.9% and for score 30 or more it was 28.1%. Chi-square showed significant association between mortality and increasing MPI score ($p < 0.01$). Odd ratios calculated were significant for age > 50 years, malignancy, organ failure, pre-operative duration of peritonitis > 24 hours and cloudy, purulent exudate.[26]

The reliability of the Mannheim Peritonitis Index (MPI) in predicting the outcome of 108 patients with peritonitis was evaluated by Yoshiko Kusumoto et al. in 2004.Overall mortality was 5.3% in males and 15.2% in women, with death occurring only in individuals over 50 years old. A comparison of MPI and mortality revealed that patients with a score of 26 or below had a death rate of 3.8%, whereas those with a score more than 26 had a mortality rate of 41.0%. The MPI

cutoff threshold of 26 resulted in 77.7% sensitivity, 97.9% specificity, and 88.8% accuracy. The study indicated that MPI is a simple, effective predictive factor for determining the severity of peritonitis without requiring significant laboratory data.[27]

Rodolfo L. et al 2004 conducted A study to confirm the predicative value of the Mannheim peri- tonitis index (MPI) among patients of peritonitis at the Hospital General de Durango. 176 cases were studied.Patients were divided into groups based on the following criteria (MPI scores): a)< 21, 21 – 29 and >29, and b) <26 and >26. Patients with >26 points had a mortality rate of 40%, whereas patients with <26 MPI points did not reach a 3% mortality rate. All MPI adverse factors, except of colonic origin, behaved as expected, and the following were especially useful: organic failure; time elapsed >24 h; malignancy; age >50 years, and generalized peritonitis.[28]

Sokmen S et al. (2001) retrospectively analysed 325 patients hospitalised to Emergency Services at Ege and Dokuz Eylül University Hospitals between 1995 and 1999 using patient data. Among these, 258 patients (79.4%) were discharged while 67 died (20.6%). In the latter, MPI scores were always equal to or greater than 26. The mean MPI scores were 30.23 7.05 and 18.55 6.67 in the exitus and discharged groups, respectively. When all descriptive parameters in MPI were examined individually, each predictor revealed statistically significant differences between exitus and discharged groups. MPI was discovered to be a useful grading system for predicting the ultimate result in patients with peritonitis and intraabdominal sepsis.[29]

Fugger et al. conducted a retrospective review of 113 individuals with purulent peritonitis. In 1988 in order to assess the prognostic usefulness of the Mannheim Peritonitis-Index. Lethality was 29% in patients with an index x larger than or equal to 21, there was no lethality below an index x = 21, and it escalated to 100% in patients

with an index x greater than or equal to 29. For the index x = 27, statistical validation revealed that the prognosis was accurate in 93% of cases, with correspondingly high sensitivity and specificity of 93%. The MPI's prediction was accurate in at least 65% of cases between x = 21 and x = 29. The MPI is demonstrated as a highly accurate prognostic measure for peritonitis in individual prognosis, which is easily able to be consistently reported.[30]

MATERIALS AND METHODS

SOURCE OF DATA

A prospective observational study was conducted in the Department of General Surgery at Dayanand Medical College and Hospital, Ludhiana, Punjab, India. 100 patients were enrolled in the study. Patients admitted in the Department of General Surgery through casualty with perforation were enrolled in the study.

METHOD OF COLLECTION OF DATA

The prospective observational study was conducted in the Department of General surgery at Dayanand Medical College and Hospital, Ludhiana, Punjab, India. Ethical clearance was obtained from institutional research board. Sample size was 100 patients**.** Patients presenting in the Department of General Surgery through casualty with clinical features of perforation peritonitis after clinical evaluation were included in the study. Perforation was diagnosed either by Xray Abdomen (supine & erect), USG abdomen, CECT Abdomen, or clinical evaluation. Based on previously conducted studies prediction was categorised into 3 groups [18][26]:

- Score≤20- CATEGORY A
- Score 21-29- CATEGORY B
- Score ≥30 - CATEGORY C

- **INCLUSION CRITERIA**:- Patients having >18years of age with diagnosis of perforation peritonitis.

- **EXCLUSION**:-
  - Patients with age less than <18 years
  - Patients not undergoing Surgery
  - Primary peritonitis.

Sample Size: 100 patients were enrolled in the study.

Sample Size Calculation: The reference study used for calculation of sample size was by Rishi Kumar Garg et al (2016) in which authors reported that a proportion of 3.3% of the subjects had non-traumatic perforation peritonitis [31].

Cochran formula used for calculation of Sample size is as follows

$n = (Z^2\alpha \text{ X } P \text{ X } (1-P))/d^2$

Where

Z α is the level of significance at 5% i.e. 95% confidence interval = 1.96
P = Proportion of non-traumatic perforation peritonitis is 3.3% = 0.033, as reported in the reference study used.
d = Desired error of margin = 3.5% = 0.035

Hence 100 patients are needed in the study.

All patients admitted were thoroughly investigated and with proper informed and written consent. Preoperative blood work-up including CBC, ABG, RFT, LFT, PTI/ INR/ ECG was done. Radiological investigations including X-ray Abdomen (erect & supine)/USG whole abdomen and/or CECT abdomen wherever possible were done. Appropriate, adequate intravenous fluid therapy were started for resuscitation, and empirical broad-spectrum antibiotics were given. All patients underwent nasogastric tube decompression. Patients were catheterised to monitor urine output. All patients underwent emergency exploratory laparotomy and surgical procedures performed were dependent on operative findings and surgeons choice as no guidelines could be laid down due to varied aetiologies.

The patients were scored using MPI scoring system at admission or within 24hrs.In addition to other clinical and biochemical values entered into pre-structural proforma, MPI was used. If the blood parameters tested more than once the most deranged value was used for scoring.

STATISTICAL ANALYSIS

Data were described in terms of range; mean ±standard deviation (± SD), frequencies (number of cases) and relative frequencies (percentages) as appropriate. Comparison of quantitative variables between the study groups was done using Kruskal-Wallis Test. For comparing categorical data, Chi square ($\chi 2$) test was performed and fisher exact test was used when the expected frequency is less than 5. A probability value (*p* value) less than 0.05 was considered statistically significant. All statistical calculations were done using (Statistical Package for the Social Science) SPSS 21.0 version (SPSS Inc., Chicago, IL, USA) statistical program for Microsoft Windows.

OBSERVATION AND RESULTS

MANNHEIM PERITONITIS INDEX

CRITERIA	SCORE
AGE >50	5
FEMALE GENDER	5
ORGAN FAILURE	7
MALIGNANCY	4
PREOPERATIVE DURATION OF PERITONITIS >24HOURS	4
ORIGIN OF SEPSIS NON COLONIC	4
DIFFUSE GENERALIZED PERITONITIS	6
PERITONEAL FLUID ANALYSIS	
CLEAR	0
CLOUDY/PURULENT	6
FECAL	12

CRITERIA FOR ORGAN FAILURE

ORGAN	CRITERIA
KIDNEY :	
CREATININE LEVEL	>177 MICROMOLE/ LITRE (>2.31MG/100ML)
UREA LEVEL	>167 MMOL/LITRE (>467.78MG/ 100ML)
OLIGURIA	<20ML/HOUR
LUNGS:	
PAO2	<50 MMHG
PACO2	>50MMHG
SHOCK	HYPODYNAMIC or HYPERDYNAMIC
INTESTINAL OBSTRUCTION (ONLY IF PROFOUND)	WITH PARALYTIC ILEUS >24HOURS OR COMPLETE MECHANICAL OBSTRUCTION

TABLE 3 : AGE DISTRIBUTION OF PATIENTS STUDIED.

Age group in years	Frequency	Percentage
< 30	20	20.0%
31-50	39	39.0%
51-70	30	30.0%
>70	11	11.0%
Total	100	100.0%

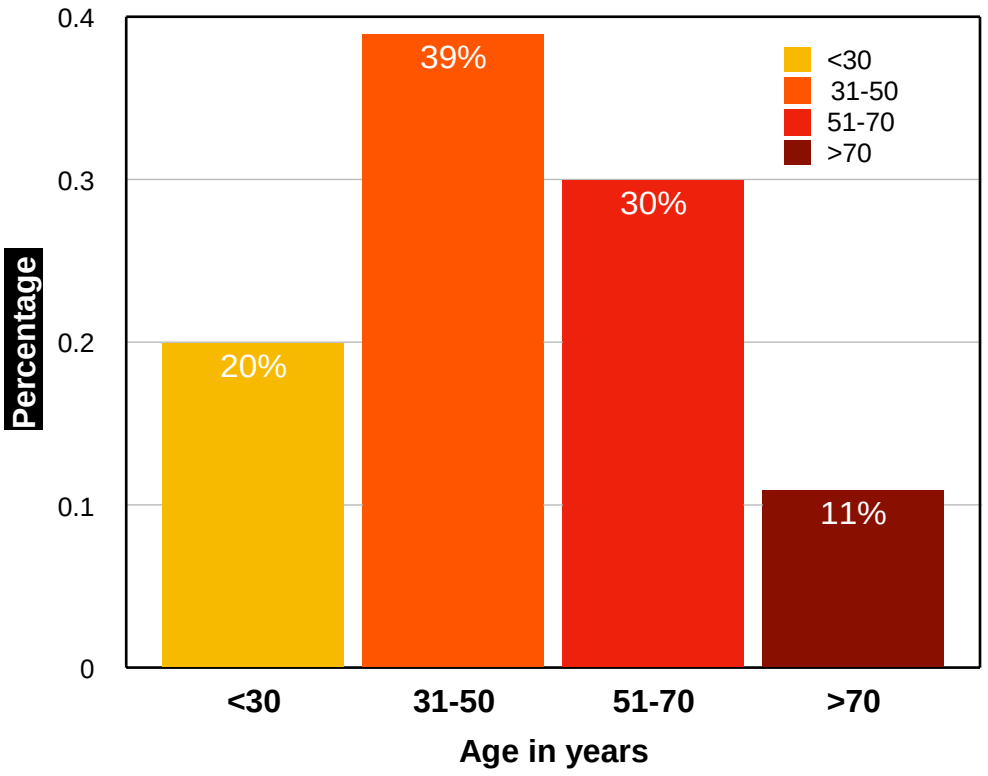


FIGURE 5: AGE DISTRIBUTION OF PATIENTS STUDIED.

The mean age of the study group was 47.64 years .Most number of patients I.e. 39% belonged to age group of 31-50 years followed by 51-70 years I.e 30%. The youngest patients was 18 years old and oldest was 90 years old.

TABLE 4:SHOWING CORRELATION OF AGE > 50 YRS WITH INCIDENCE OF MORTALITY

Age in years	OUTCOME				Total	Chi-square value	p-value
	DEATH		DISCHARGE				
	Frequency	Percentage	Frequency	Percentage			
<50	6	26.1%	52	67.5%	58	12.488	0.001
>50	17	73.9%	25	32.5%	42		
Total	23	100.0%	77	100.0%	100		

In our study 58(58%) patients belonged to age group of <50 years while 42(42%) patients were of age > 50 years. 52(52/77 i.e. 67.5%) patients of age less than 50 years were discharged while in 6 (6/23 I.e. 26.1%) patients death was the final outcome. Out of 42 patients belonging to age group of >50 years 25 (25/77 I.e. 32.5%) patients were discharged ;whereas 17 (17/23 i.e. 73.9%) did not survive . In correlation between Age > 50 yrs with incidence of mortality, our study show statistically significant result with p- value of **0.001**

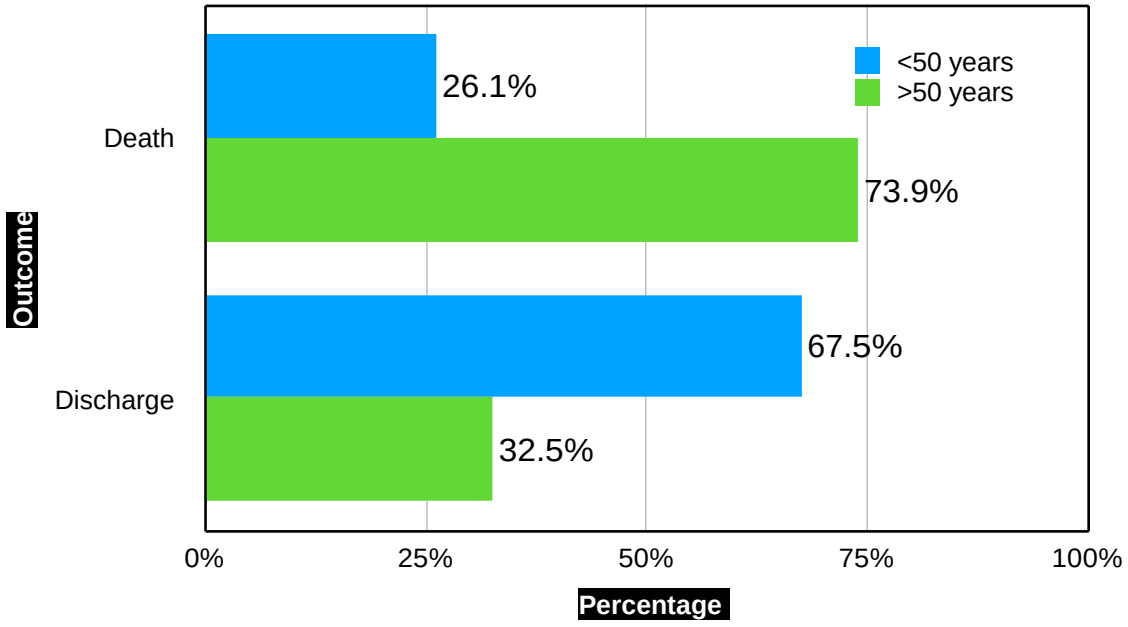


FIGURE 6: Showing correlation of Age > 50 yrs with incidence of mortality

TABLE 5 : SEX DISTRIBUTION OF PATIENTS STUDIES.

Sex	Frequency	Percentage
Female	34	34.0%
Male	66	66.0%
Total	100	100.0%

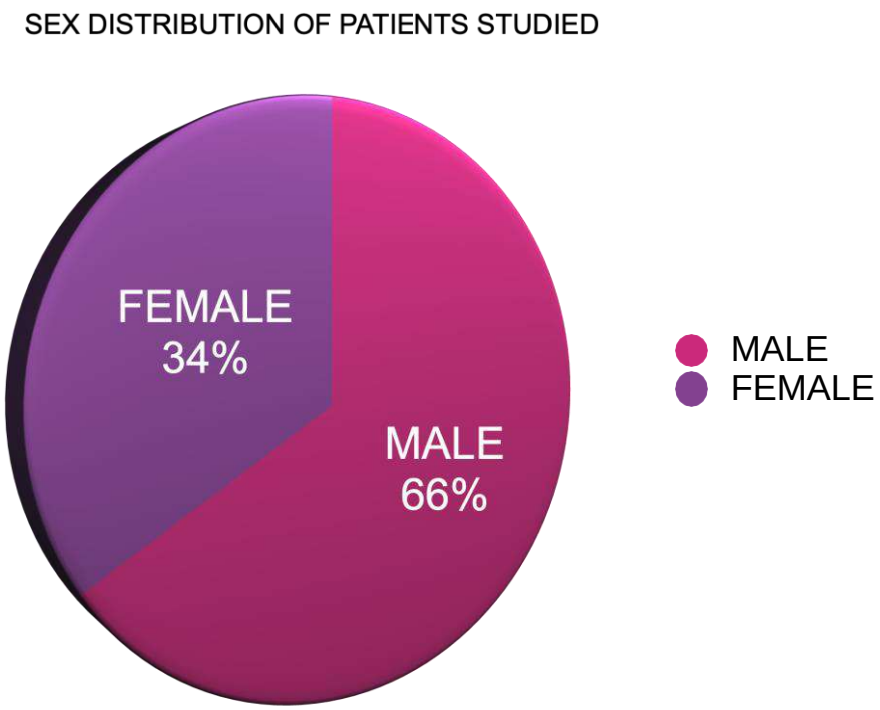


FIGURE 7 : SEX DISTRIBUTION OF PATIENTS STUDIED

66 (66%) patients in our study were in the male group and 34 (34%) patients were from the female group. Males formed the predominant group in our study

TABLE 6: SHOWING CORRELATION OF SEX WITH INCIDENCE OF MORTALITY

	OUTCOME				Total	Chi-square value	p-value
Sex	DEATH		DISCHARGE				
	Frequency	Percentage	Frequency	Percentage			
Male	14	60.9%	52	67.5%	66	0.350	0.554
Female	9	39.1%	25	32.5%	34		
Total	23	100.0%	77	100.0%	100		

In out study we noted that the number of males was **66** (66%) while number of females was 34 (34%) . Out of 66 male patients death was recorded in 14(60.9%) patients ,while 52 (67.5%) male patients were discharged . Out of 34 female patients 25(32.5%) were discharged . Death was recorded in 9 (39.1%) of female patients . In correlation of sex with incidence of mortality, p value in our study was **0.554** which is statistically insignificant &shows contrast results with MPI.

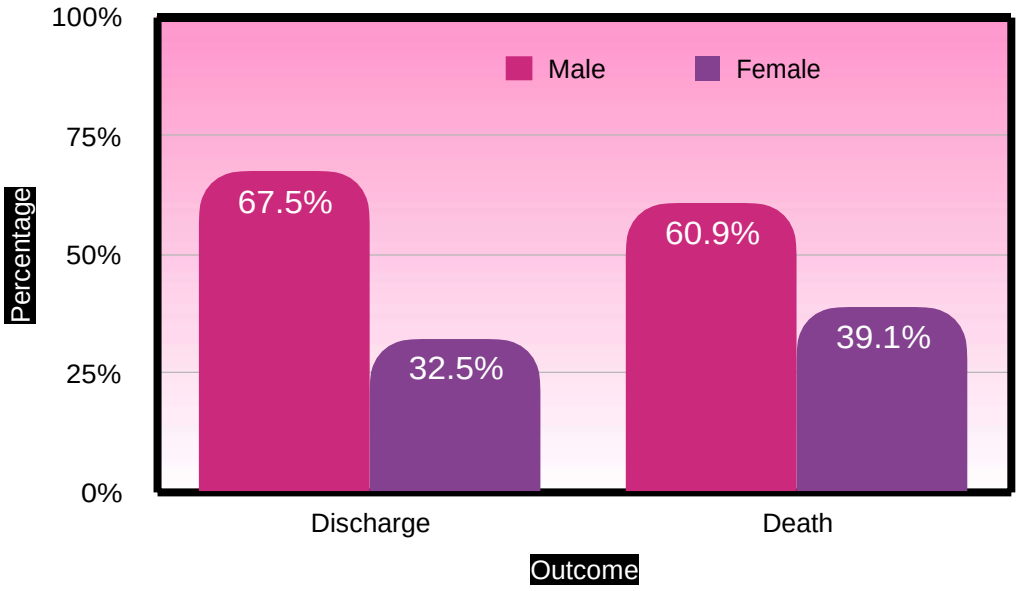


FIGURE 8 :Showing correlation of Sex with incidence of mortality

TABLE 7: DURATION OF PRESENTING SYMPTOMS

Duration of symptoms	Frequency	Percentage
>24 hours	92	92%
<24 hours	8	8%
TOTAL	100	100%

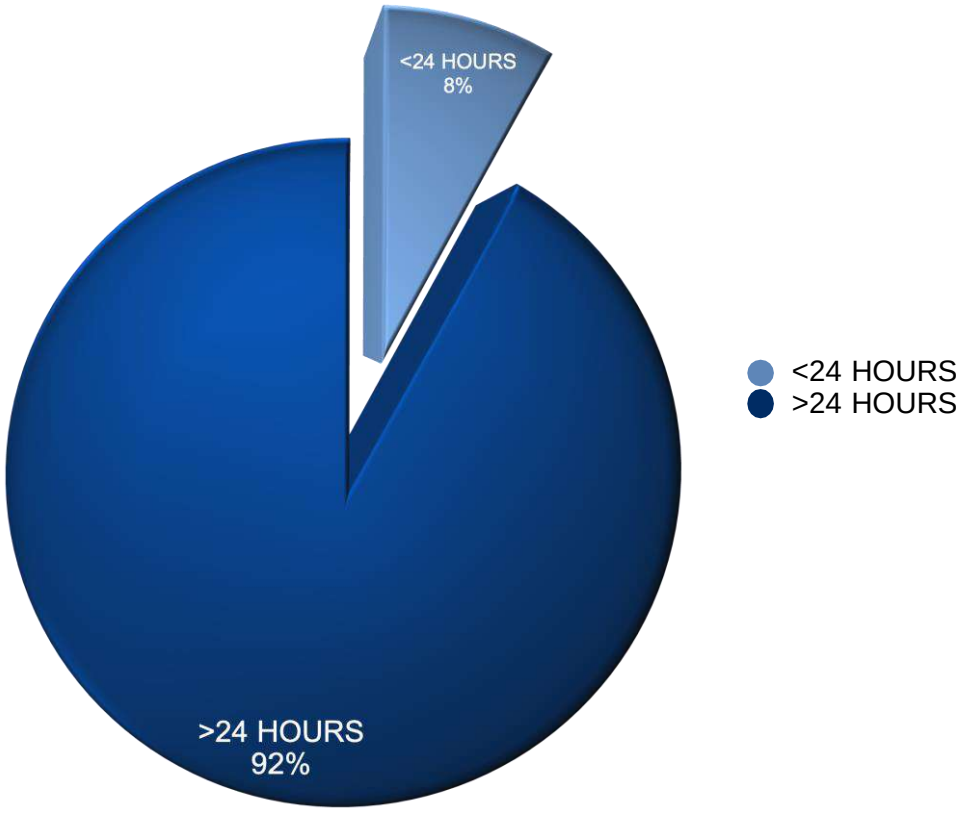


FIGURE 9: DURATION OF PRESENTING SYMPTOMS.

In our study, 8 patients (8%) presented within 24 hrs of onset of peritonitis symptoms and 92 (92%) presented after 24 hours

TABLE 8:SHOWING CORRELATION OF PREOPERATIVE DURATION OF PERITONITIS WITH INCIDENCE OF MORTALITY

Duration of peritonitis	OUTCOME				Total	Chi-square value	p-value
	DEATH		DISCHARGE				
	Frequency	Percentage	Frequency	Percentage			
<24 hours	0	0.0%	8	10.4%	8	2.597	0.192
>24 hours	23	100.0%	69	89.6%	92		
Total	23	100.0%	77	100.0%	100		

We noted in out study that 92 (92%) patients presented after 24 hours of onset of peritonitis symptoms whereas 8(8%) patients presented within 24 hours of onset of symptoms. Out of 92 patients which presented after more than 24 hours of onset of symptoms 69(69/92 i.e. 89.6%) patients were discharged ,while 23(23/23 I.e. 100%) patients did not survive. Out of the remaining 8 patients which presented within 24 hours of onset of symptoms all the 8(8/8 I.e. 100%) patients were discharged . There were 0 deaths reported in patients who presented within 24 hours of onset of symptoms. In correlation of preoperative duration with incidence of mortality, our study showed statistically non significant result with p value 0.192 showing no correlation between pre operative duration with incidence of mortality

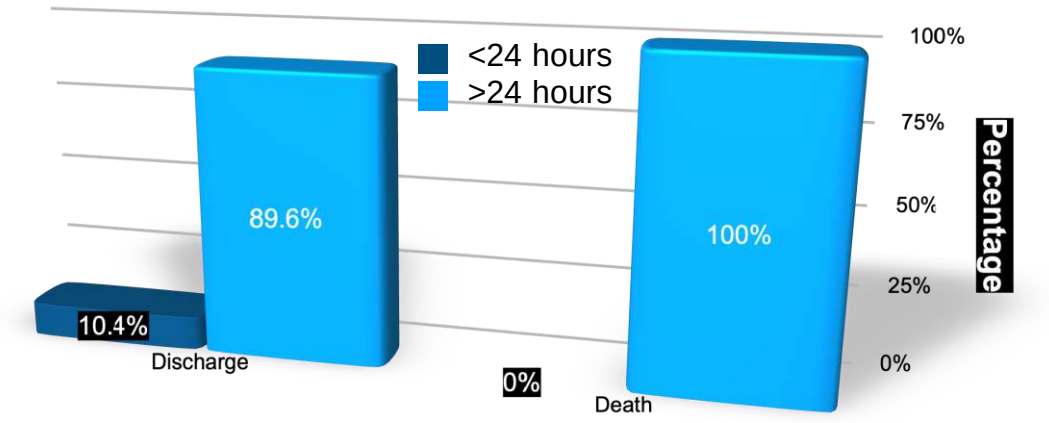


FIGURE 10 :SHOWING CORRELATION OF PREOPERATIVE DURATION OF PERITONITIS WITH INCIDENCE OF MORTALITY

TABLE 9: PRESENCE OF ORGAN FAILURE IN PATIENTS STUDIED

ORGAN FAILURE	Frequency	PERCENTAGE
YES	33	33.0%
NO	67	67.0%
TOTAL	100	100.0%

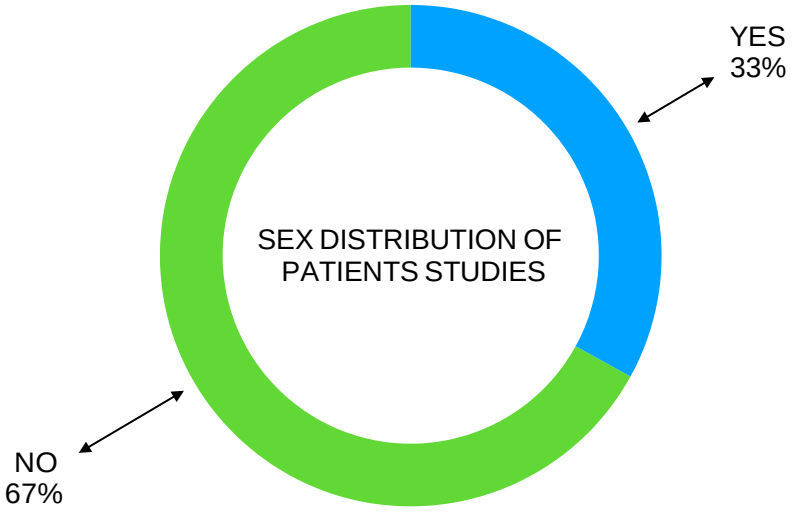


FIGURE 11: PRESENCE OF ORGAN FAILURE IN PATIENTS STUDIED

In our study 67 (67%) patient had preoperative organ failure while 33 (33%) patients had no preoperative organ failure.

TABLE 10: SHOWING CORRELATION OF ORGAN FAILURE WITH INCIDENCE OF MORTALITY

	OUTCOME				Total	Chi-square value	p-value
ORGAN FAILURE	DEATH		DISCHARGE				
	Frequency	Percentage	Frequency	Percentage			
NO	3	13.0%	64	83.1%	67	39.331	0.001
YES	20	87.0%	13	16.9%	33		
Total	23	100.0%	77	100.0%	100		

It was noted in our study that 33(33%) patients had organ failure preoperatively while 67(67%) patients did not have any organ failure. Out of 33(33%) patients with organ failure 13(16.9%) patients were discharged, while death was recoded in 20(87%) patients. Out of 67 (67%)patients which did not have any organ failure preoperatively 64 (83.1%) were discharged , while the remaining 3 (13%) did not survive. In correlation of organ failure with incidence of mortality p value in our study was **0.001** which is statistically significant thus showing correlation between organ failure and incidence of mortality .

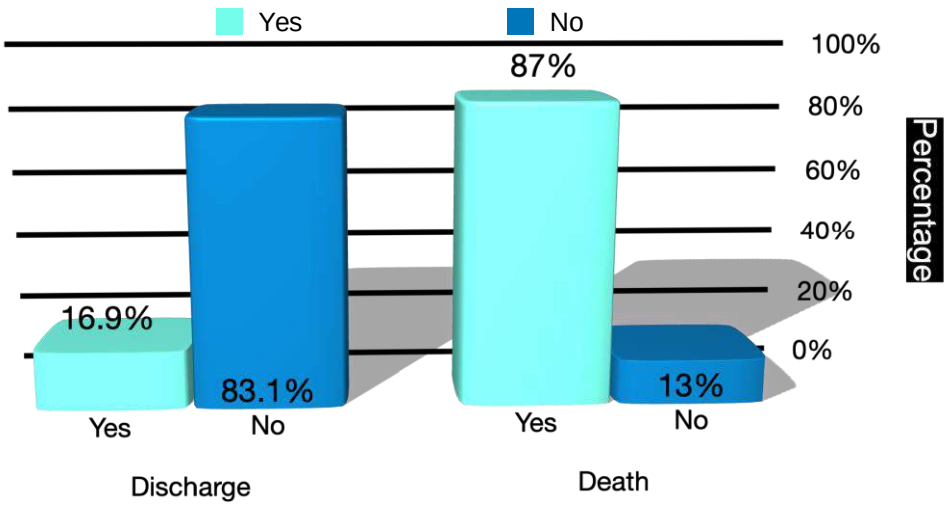


FIGURE 12: SHOWING CORRELATION OF ORGAN FAILURE WITH INCIDENCE OF MORTALITY

TABLE 11: ORIGIN OF SEPSIS (COLONIC/NON COLONIC)

Origin of sepsis	Frequency	Percentage
Non colonic	88	100.0%
Colonic	12	12.0%
Total	100	100.0%

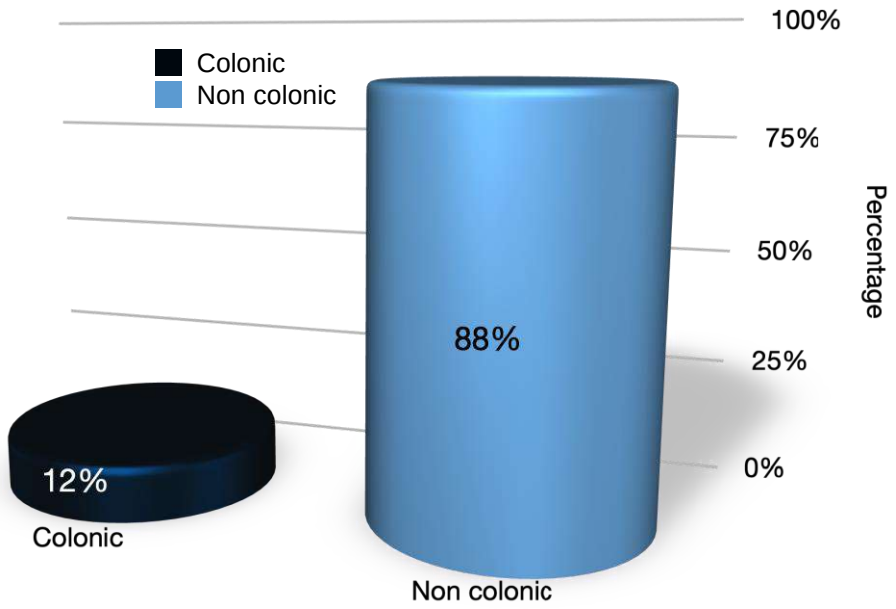


FIGURE 13 : ORIGIN OF SEPSIS (COLONIC/NON COLONIC)

In our study 12 (12)% patients had colonic origin of while in 88 (88 %) patients origin of sepsis was non colonic.

TABLE 12: SHOWING CORRELATION BETWEEN ORIGIN OF SEPSIS (COLONIC / NON COLONIC) WITH INCIDENCE OF MORTALITY

Origin of sepsis	OUTCOME				Total	Chi-square value	p-value
	DEATH		DISCHARGE				
	Frequency	Percentage	Frequency	Percentage			
Non Colonic	19	82.6%	69	89.6%	88	0.822	0.464
Colonic	4	17.4%	8	10.4%	12		
Total	23	100.0%	77	100.0%	100		

Out of 100 patients in our study in 88(88%) patients the origin of sepsis was non colonic while in the remainder 12(12%) there was colonic in origin. Among 12 patients with colonic origin of sepsis 4(4/23 I.e 17.4%) deaths were noted , 8 (8/88 i.e 10.4%) patients were discharged. Among 88 (88%) patients who had non colonic origin of sepsis death was reported in 19 (19/88 i.e 82.6%) patients and 69 (69/88 I.e. 89.6%) patients were discharged. In correlation of origin of sepsis (colonic v.s. non colonic) with incidence of mortality p value in our study was **0.464** which is statistically insignificant

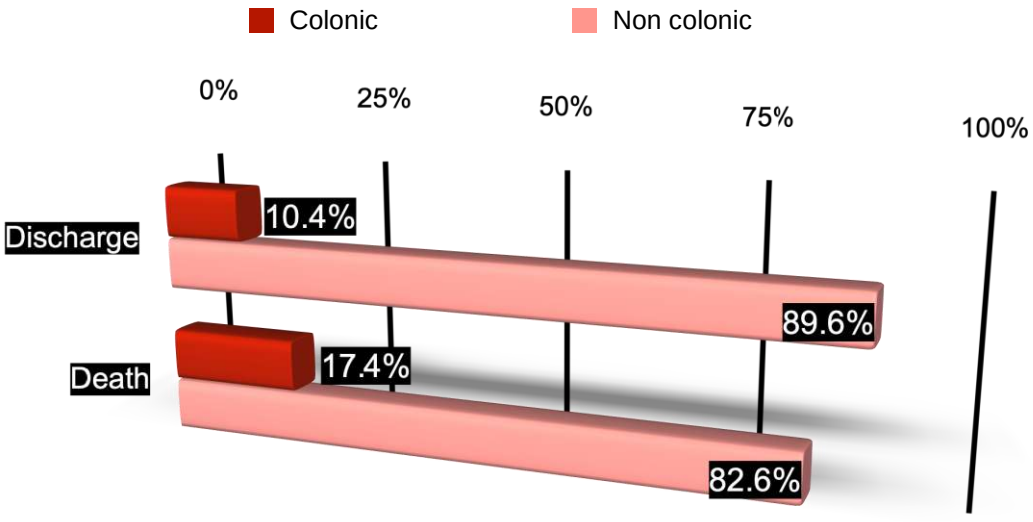
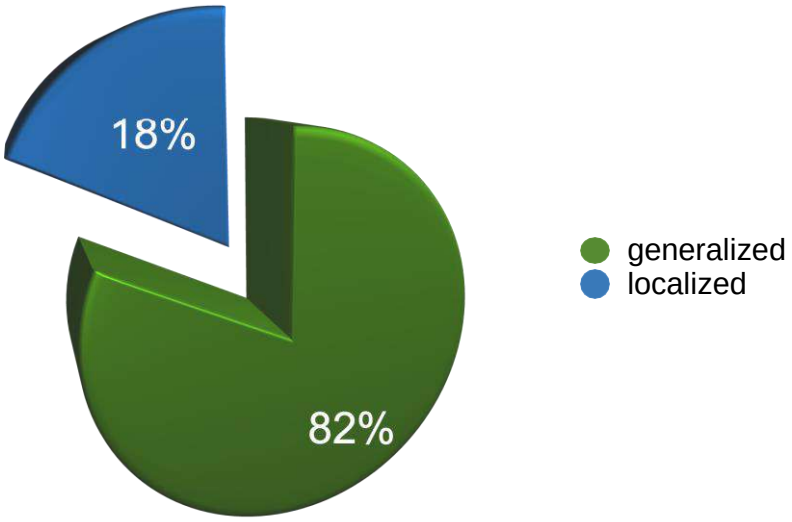


FIGURE 14 : SHOWING CORRELATION BETWEEN ORIGIN OF SEPSIS (COLONIC / NON COLONIC) WITH INCIDENCE OF MORTALITY

TABLE 13 : TYPE OF PERITONITIS IN STUDY POPULATION.

Type of peritonitis	Frequency	Percentage
Localised	18	18.0%
Generalised	82	82.0%
Total	100	100.0%



Type of peritonitis in study population

FIGURE 15: TYPE OF PERITONITIS IN STUDY POPULATION.

In our study, 82% of patients were diagnosed with diffuse peritonitis, whereas 18% were diagnosed with localised peritonitis I.e. patients with localised peritonitis had features of peritonitis but on exploration there was localised pus collection to one quadrant only.

TABLE 14: SHOWING CORRELATION BETWEEN TYPE OF PERITONITIS WITH INCIDENCE OF MORTALITY

Type of peritonitis	OUTCOME				Total	Chi-square value	p-value
	DEATH		DISCHARGE				
	Frequency	Percentage	Frequency	Percentage			
Localised	0	0.0%	18	23.4%	18	6.557	0.011
Diffuse generalised	23	100.0%	59	76.6%	82		
Total	23	100.0%	77	100.0%	100		

In our study, 82 patients (82%) had diffuse generalised peritonitis, whereas 18 (18%) had localised peritonitis. Among patients with diffuse generalised peritonitis, 59 (59/77 I.e. 76.6%) were discharged and 23 (23/23 i.e. 100%) died. In patients with localised peritonitis, 18 (18/77 i.e. 23.4%) were discharged and there were 0 deaths. The p-value in our study was **0.011**, which is statistically significant, indicating a link between the type of peritonitis (generalised/localised) and the incidence of mortality.

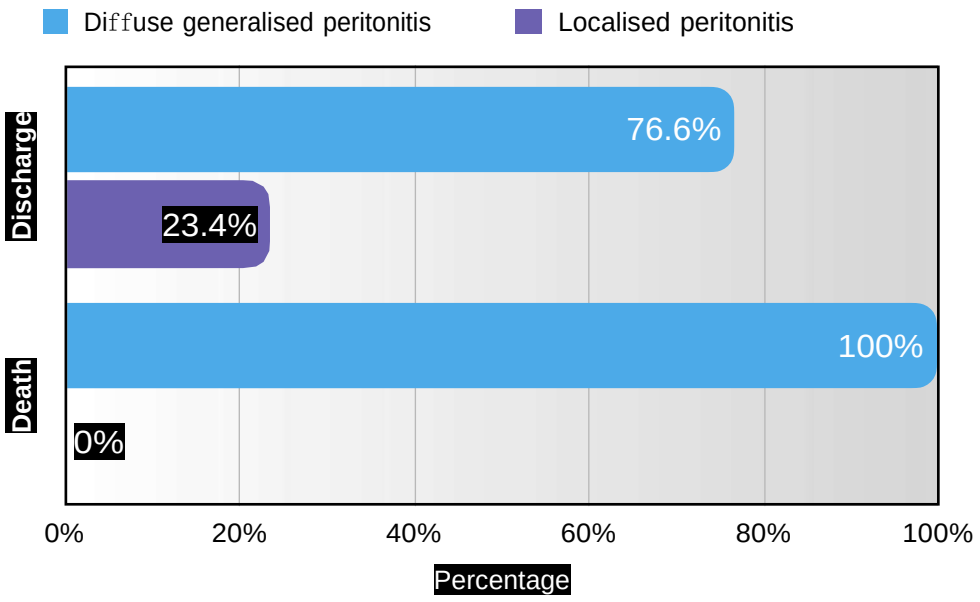


FIGURE 16: SHOWING CORRELATION BETWEEN TYPE OF PERITONITIS WITH INCIDENCE OF MORTALITY

TABLE 15: PRESENCE OF MALIGNANCY IN STUDY POPULATION.

Malignancy	Frequency	Percentage
No	99	99.0%
Yes	1	1.0%

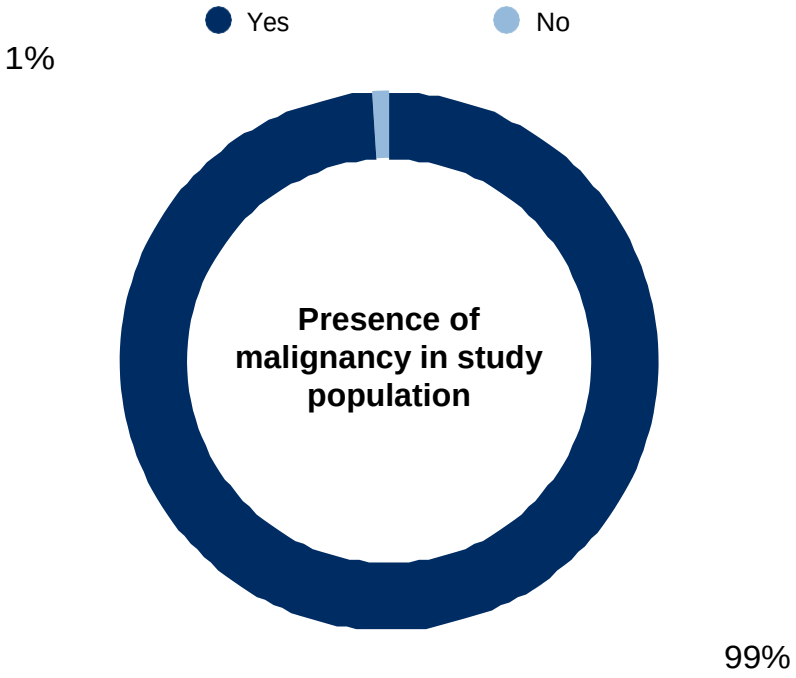


FIGURE 17: PRESENCE OF MALIGNANCY IN STUDY POPULATION.

In our research, among 100 patients, just one individual (1%) was diagnosed with malignancy.

TABLE 16 :SHOWING CORRELATION OF MALIGNANCY WITH INCIDENCE OF MORTALITY

0(0%) mortalities in patient with malignancy . 77(76/77 i.e.

Malignancy	OUTCOME				Total	Chi-square value	p-value
	DEATH		DISCHARGE				
	Frequency	Percentage	Frequency	Percentage			
Yes	0	0.0%	1	1.3%	1	0.302	0.583
No	23	100.0%	76	98.7%	99		
Total	23	100.0%	77	100.0%	100		

98.7%) patients which were discharged had no evidence of mortality.In correlation between presence of malignancy with incidence of mortality, our study show statistically insignificant result with p- value of **0.583** indicating no link between presence of malignancy and mortality.

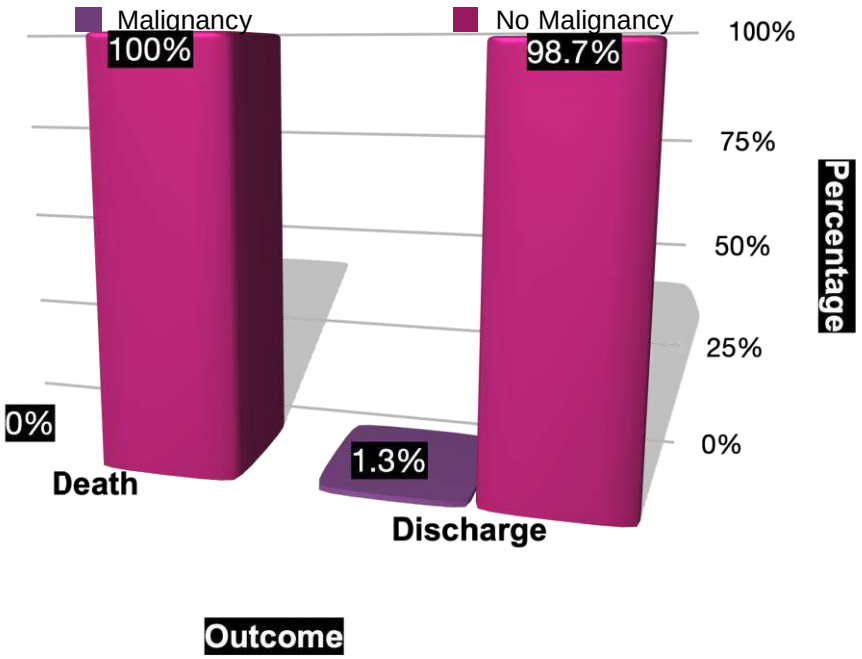


FIGURE 18 : SHOWING CORRELATION OF MALIGNANCY WITH INCIDENCE OF MORTALITY

TABLE 17 : CHARACTER OF EXUDATE IN STUDY POPULATION

Type of exudate	Frequency	Percentage
Clear	0	0.0%
Cloudy	6	6.0%
Purulent	66	66.0%
Fecal	28	28.0%
Total	100	100.0%

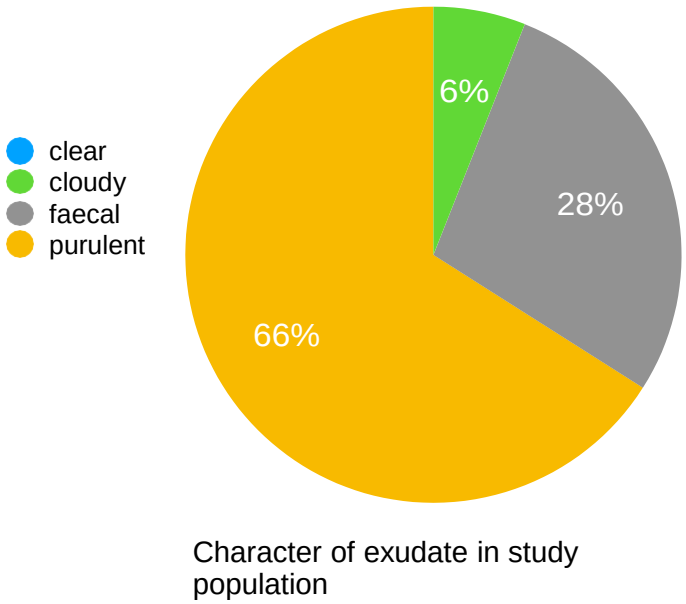


FIGURE 19 : CHARACTER OF EXUDATE IN STUDY POPULATION

In our study 66 (66%) patients had purulent exudates ,6 (6%)patients had cloudy exudates . Fecal exudate was seen in 28(28%) of the study population. None of the patients in study population had clear exudate.

TABLE 18:SHOWING CORRELATION OF TYPE OF EXUDATE WITH INCIDENCE OF MORTALITY

	Outcome				Total	Chi-square value	P-value
Type of exudate	Death		Discharge				
	Frequency	Percentage	Frequency	Percentage			
Clear	0	0.0%	0	0.0%	0		
Cloudy	0	0.0%	6	7.8%	6		
Purulent	8	34.8%	58	75.3%	66	20.979	0.001
Fecal	15	65.2%	13	16.9%	28		
Total	23	100.0%	77	100.0%	100		

It was noted in our study that 0(0%) patients had clear exudate. 6 patients had cloudy exudate , 66 had purulent exudate and 28 and fecal exudate intraoperatively. 6(6/77 I.e 7.8%) patients with cloudy exudate were discharged while there were 0 deaths. 58 (58/77 i.e. 75.3%) patients with purulent exudate were discharged while 8(8/23 i.e. 34.8%) patients did not survive. 13(13/77 I.e. 16.9%) patients with fecal exudate were discharged whereas death was recorded in 15(15/23 I.e. 65.2%) patients with fecal exudate. In correlation between type of exudate with incidence of mortality, our study show statistically significant result with p- value of **0.001** indicating link between type of exudate and mortality.

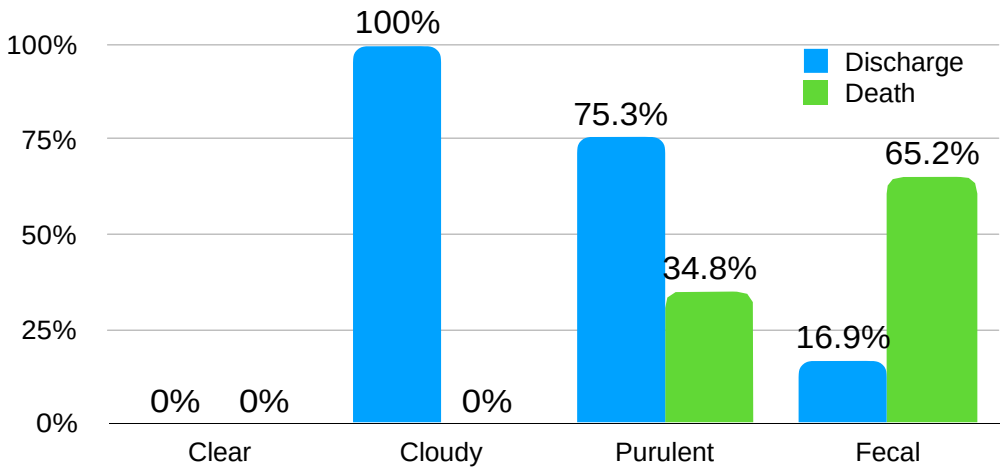


FIGURE 20 : SHOWING CORRELATION OF TYPE OF EXUDATE WITH INCIDENCE OF MORTALITY

TABLE 19: MPI SCORE WISE DISTRIBUTION OF PATIENTS

MPI Category	MPI Score	Frequency	Percentage
A	**≤20**	27	27.0%
B	**21-29**	39	39.0%
C	**≥30**	34	34.0%

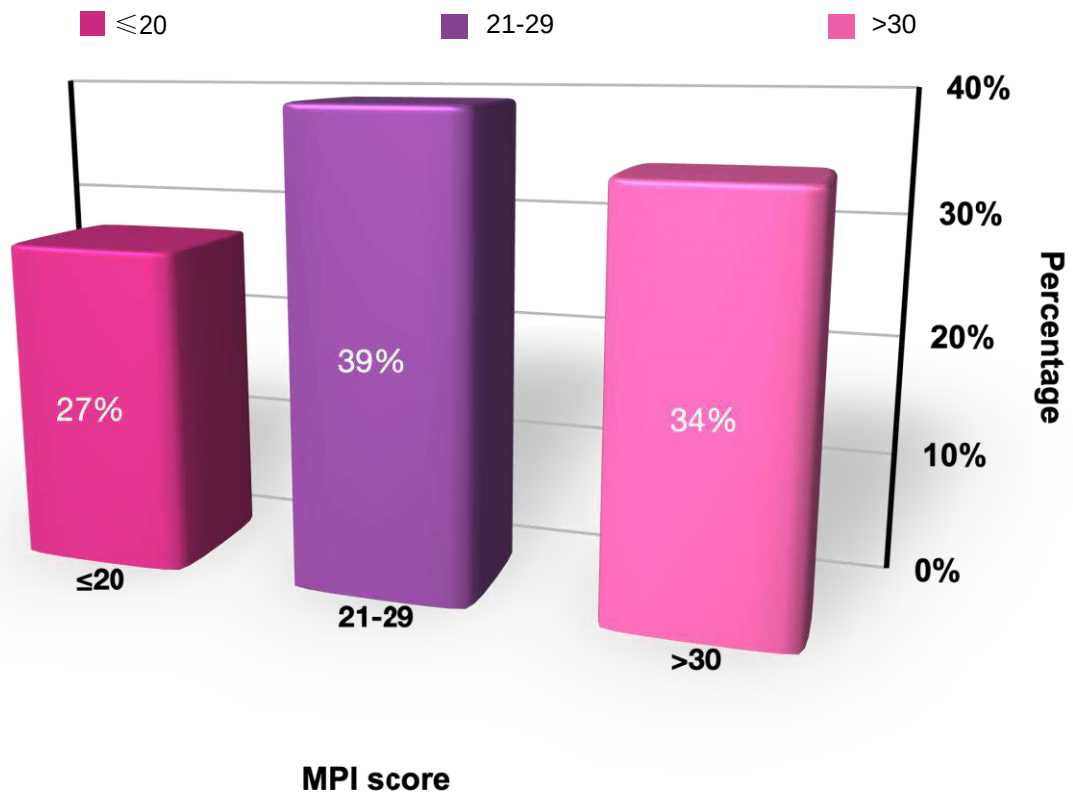


FIGURE 21: MPI SCORE WISE DISTRIBUTION OF PATIENTS

Based on our analysis, the overall MPI score was below 21 in 27 (27%) patients, between 21 and 29 in 39 (39%) patients, and above 30 in 34 (34%) patients.

TABLE 20 : SHOWING CORRELATION OF MPI SCORE WITH OUTCOME IN VARIOUS STUDY GROUPS

Outcome	Group A		Group B		Group C		Total	Chi-square value	p-value
	N	%	N	%	N	%			
DISCHARGE	27	100.0%	38	97.4%	12	35.3%	77	50.655	0.001
DEATH	0	0.0%	1	2.6%	22	64.7%	23		
TOTAL	**27**	**100.0%**	**39**	**100.0%**	**34**	**100.0%**	**100**		

In our study we found out that in study group A(n=27) all 27 patients were discharged and there were 0 deaths. In study group B (n=39) 38 patients (97.4%) patients were discharged while 1 patient (2.6%) did not survive. In study group C(n=34) 12 patients (35.3%)were discharge , and in 22 patients(64.7%) death was recorded as outcome. This study showed a a significant relationship between MPI score and final outcome(**p value 0.001**).

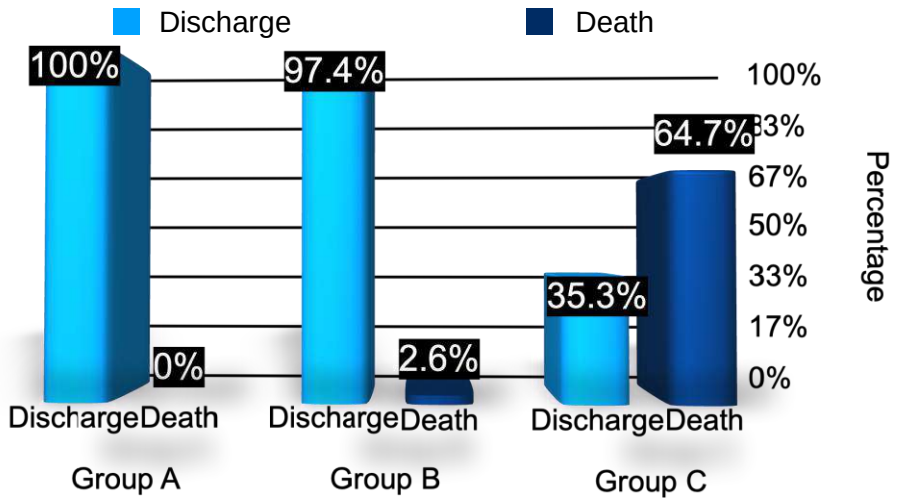
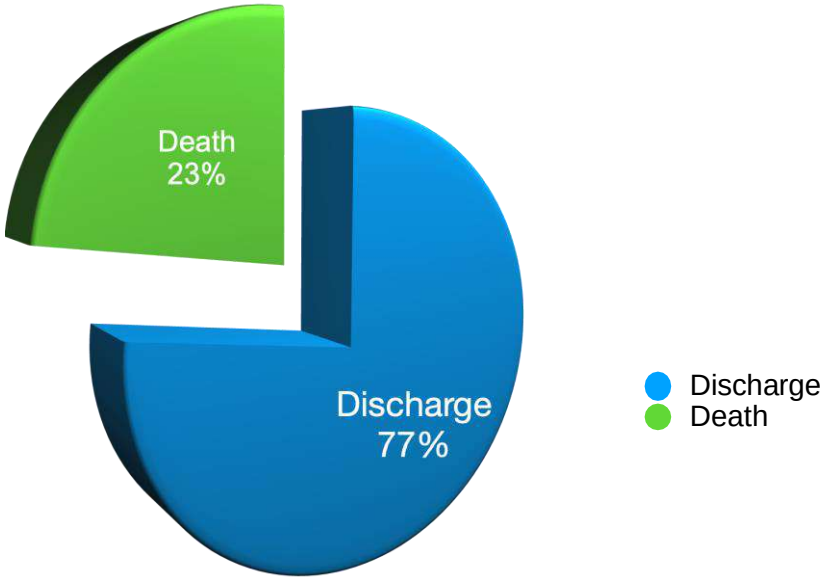


FIGURE 22 : CORRELATION OF MPI SCORE WITH OUTCOME IN VARIOUS STUDY GROUPS

TABLE 21: OUTCOME OF PATIENTS IN STUDY POPULATION

OUTCOME	Frequency	Percentage
DISCHARGE	77	77.0%
DEATH	23	23.0%
Total	100	100.0%



Outcome of patients in study population

FIGURE 23 : OUTCOME OF PATIENTS IN STUDY POPULATION

Out of the patients involved in our research, a significant majority, 77(77%) individuals, were discharged following their treatment. There was a mortality rate of 23 patients, accounting for 23% of the total patient population under study.

TABLE 22: SHOWING CORRELATION OF MPI SCORE WITH INCIDENCE OF MORTALITY

Study group	Frequency	Mortality	Percentage	Chi-square value	p-value
A	27	0	0	50.655	0.001
B	39	1	4.3%		
C	34	22	95.7%		
Total	100	23	100%		

In our study mortality rate among patients with MPI score ≤ 20 I.e study group A(n=27) was 0% (n=0)while in study group with MPI score ≥30 I.e study group C(34) was 95.7%(n=22) which is statistically significant with p value of **0.001 .** Remaining 4.3% deaths (n=1) were noted in study group B.

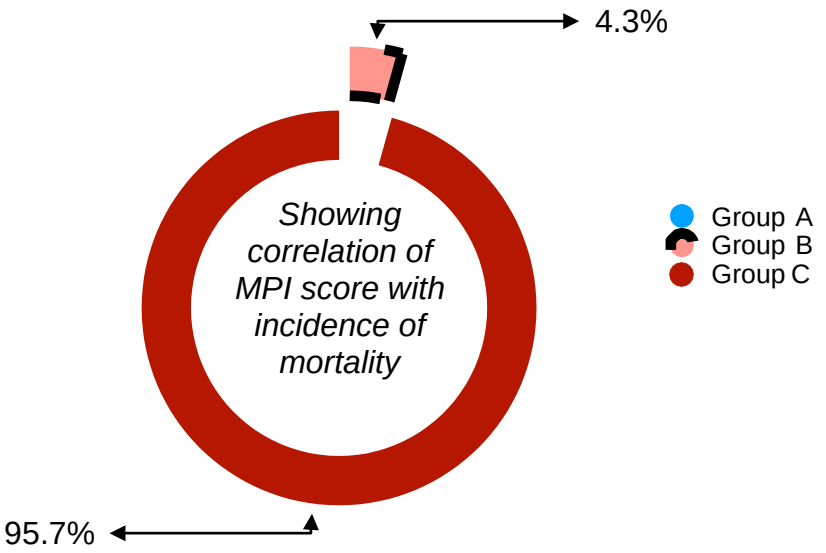


FIGURE 24 : SHOWING CORRELATION OF MPI SCORE WITH INCIDENCE OF MORTALITY

TABLE 23 :WOUND INFECTION IN PATIENTS IN OUR STUDY POPULATION.

Wound infection	Frequency	Percentage
NO	59	59.0%
YES	41	41.0%

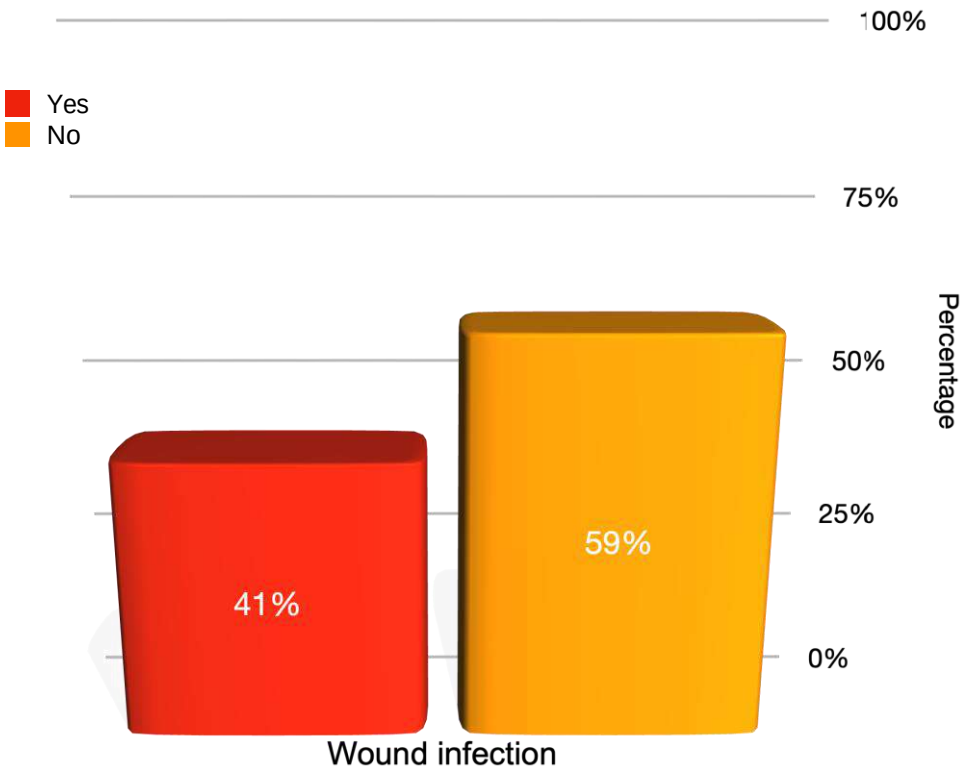


FIGURE 25 :WOUND INFECTION IN PATIENTS IN OUR STUDY POPULATION.

It was observed in our study that 41 patients (41%) had a wound infection, while 59 patients (59%) did not have a wound infection.

TABLE 24 : SHOWING COMPARISON OF POST OPERATIVE WOUND INFECTION IN VARIOUS STUDY GROUPS.

WOUND INFECTION	Study groups						Total	Chi-square value	p-value
	A		B		C				
NO	20	74.1%	25	64.1%	14	41.2%	59	7.421	0.024
YES	7	25.9%	14	35.9%	20	58.8%	41		

It was observed that 7(25.9%) patients in group A , 14(35.9%) patients in group b and 20(58.8%) patients in group c developed post operative wound infection. On correlating wound infection in various study group we found statistically significant results with p value 0.024. Increasing MPI score therefore correlated with a higher risk of developing wound infection postoperatively.

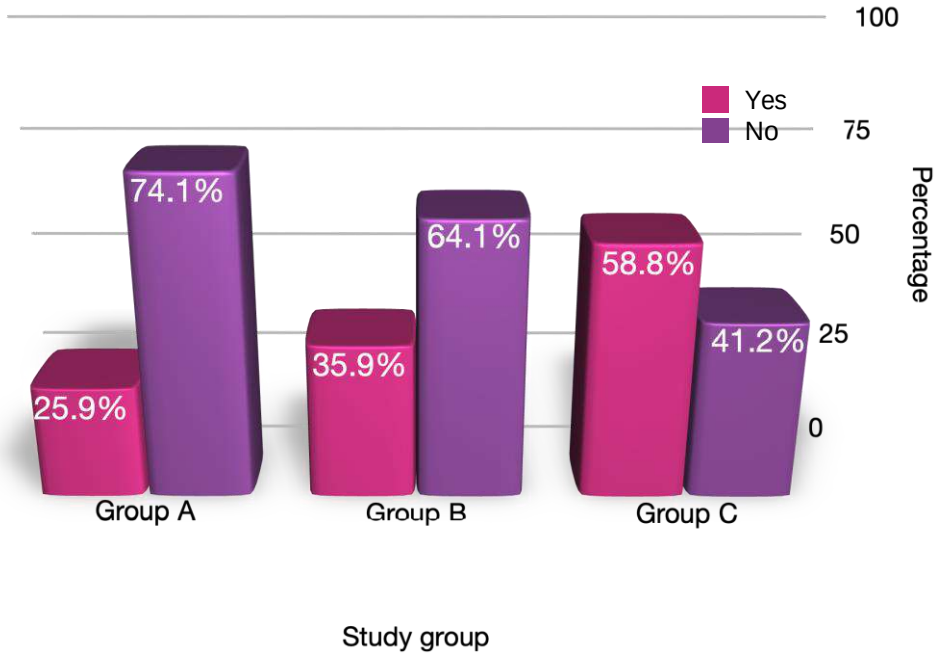


FIGURE 26 : SHOWING COMPARISON OF POST OPERATIVE WOUND INFECTION IN VARIOUS STUDY GROUPS.

TABLE 25 : WOUND DEHISCENCE IN PATIENTS IN OUR STUDY POPULATION.

Wound Dehiscence	Frequency	Percentage
No	96	96.0%
Yes	4	4.0%

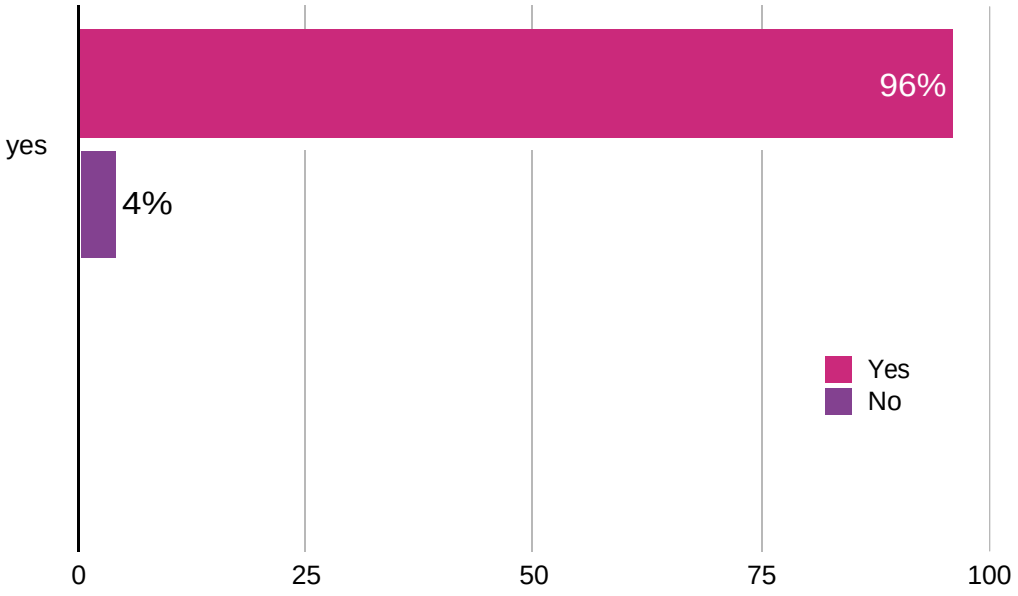


FIGURE 27 : WOUND DEHISCENCE IN PATIENTS IN OUR STUDY POPULATION.

In the study population, 4(4%) individuals experienced wound dehiscence, whereas 96(96%) patients did not experience any wound dehiscence.

TABLE 26 : POST OPERATIVE INTRA ABDOMINAL COLLECTION IN STUDY POPULATION

Intra abdominal collection	Frequency	Percentage
No	89	89.0%
Yes	11	11.0%

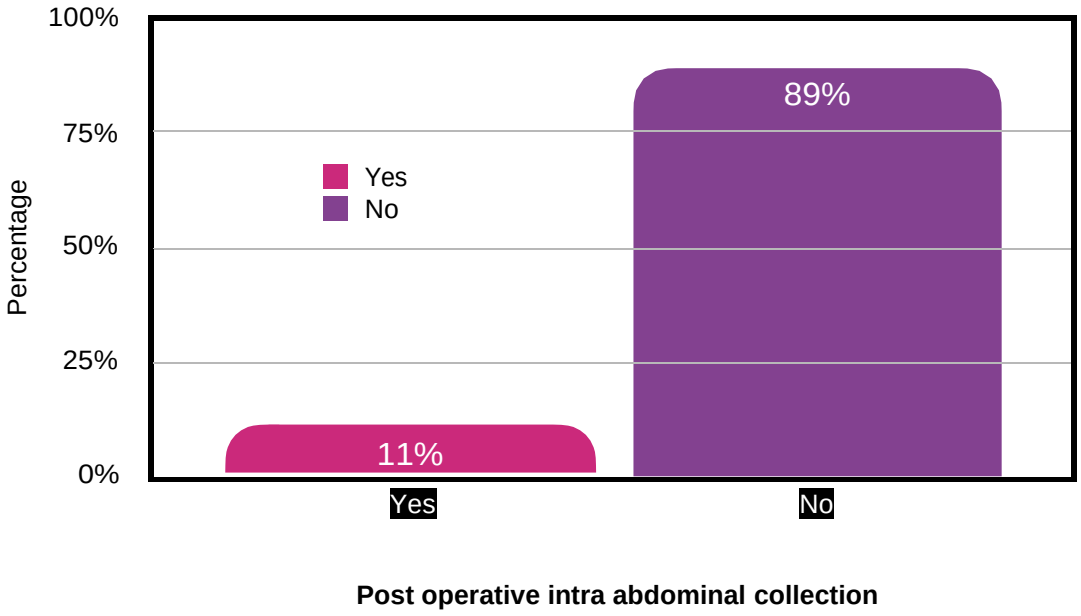
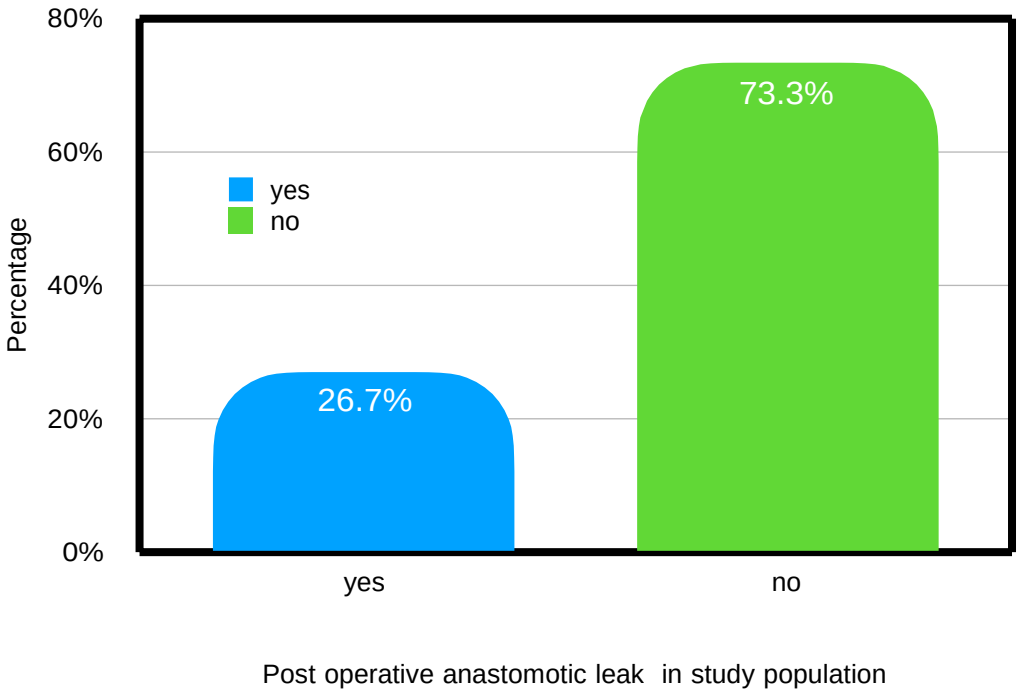


FIGURE 28 : POST OPERATIVE INTRA ABDOMINAL COLLECTION IN STUDY POPULATION

In our study it was observed that 96(96%) patients had no post operative intraabdominal collection whereas 4(4%) patients suffered from post operative intraabdominal collection.

TABLE 27 : POST OPERATIVE ANASTOMOTIC LEAK IN STUDY POPULATION

Anastomotic leak	Frequency	Percentage
NO	11	73.3%
YES	4	26.7%
TOTAL	15	100.0%



Post operative anastomotic leak in study population

FIGURE 29 : POST OPERATIVE ANASTOMOTIC LEAK IN STUDY POPULATION

In our study group, 15 patients underwent anastomosis of bowel. 11 patients (73.3%) had uneventful recovery, while 4 patients (26.7 %), experienced post operative anastomotic leak.

TABLE 28: NEED FOR POST OPERATIVE DIALYSIS IN STUDY POPULATION

Dialysis	Frequency	Percentage
NO	98	98.0%
YES	2	2.0%

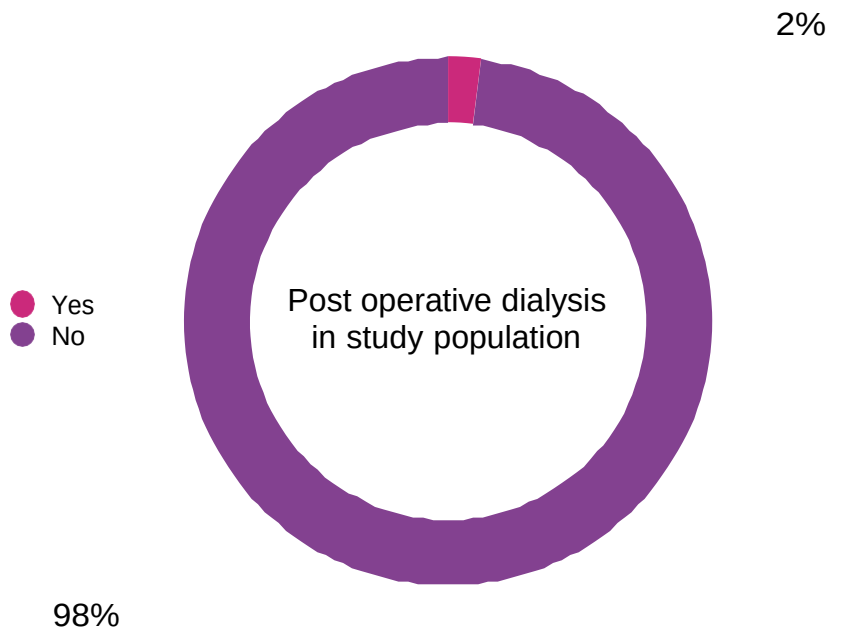


FIGURE 30 : NEED FOR POST OPERATIVE DIALYSIS IN STUDY POPULATION

In our study population 96(96%) postoperatively did not require dialysis while 2(2%) patients underwent dialysis postoperatively.

TABLE 29 : NEED FOR POSTOPERATIVE VENTILATORY SUPPORT IN STUDY POPULATION.

Mechnical ventilation	Frequency	Percentage
NO	55	55.0%
YES	45	45.0%

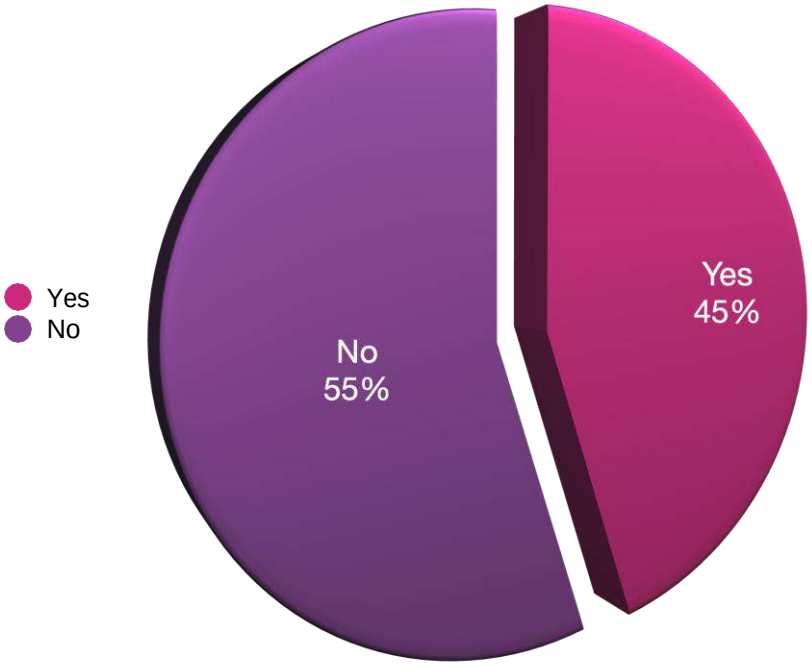


FIGURE 31 :NEED FOR POSTOPERATIVE VENTILATORY SUPPORT IN STUDY POPULATION.

45(45%) patients in our study group required post operative ventilatory support whereas 45(45%) did not require any post operative ventilatory support.

TABLE 30 : SHOWING COMPARISON OF NEED OF POST OPERATIVE VENTILATORY SUPPORT VARIOUS STUDY GROUPS

MECHANICAL VENTILATION	Study group						Total	Chi-square value	p-value
	A		B		C				
NO	26	96.3%	20	51.3%	9	26.5%	55	30.003	0.001
YES	1	3.7%	19	48.7%	25	73.5%	45		

In our study was noted that in 1(3.7%) patient in study group A, 19(48.7%) patients in study group B and 25(73.5%) patients in study group C required postoperative ventilatory support. On correlating need for mechanical ventilation in various study group we found statistically significant results with p value 0.001.Thus the need for post operative ventilatory support increased with increasing MPI score

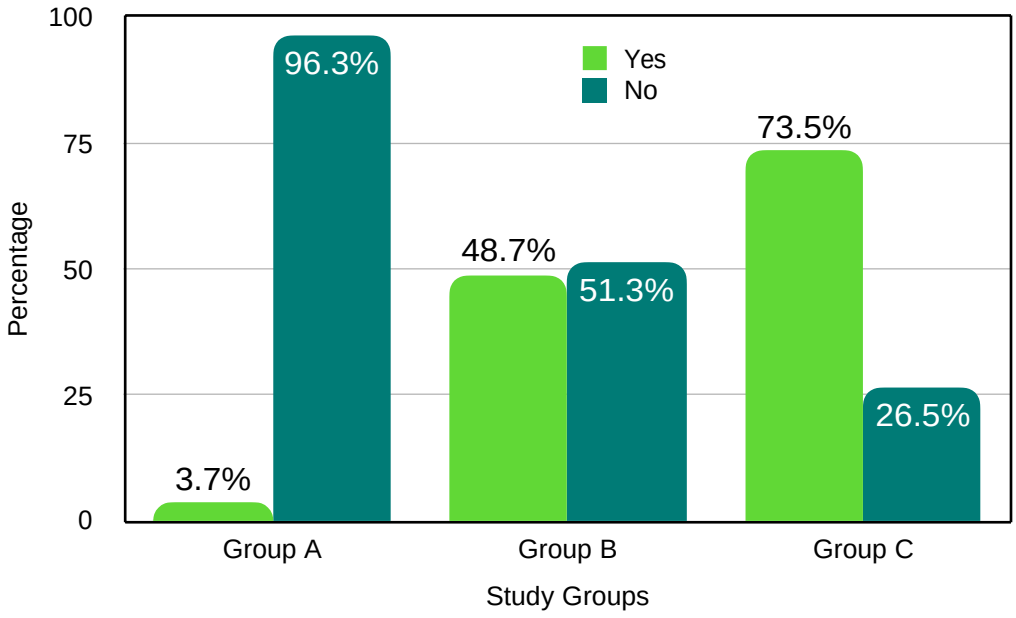


FIGURE 32 : SHOWING COMPARISON OF NEED OF POST OPERATIVE VENTILATORY SUPPORT VARIOUS STUDY GROUPS

TABLE 31 : NEED FOR ICU STAY IN STUDY POPULATION.

ICU STAY	FREQUENCY	PERCENTAGE
NO	40	40.0%
YES	60	60.0%

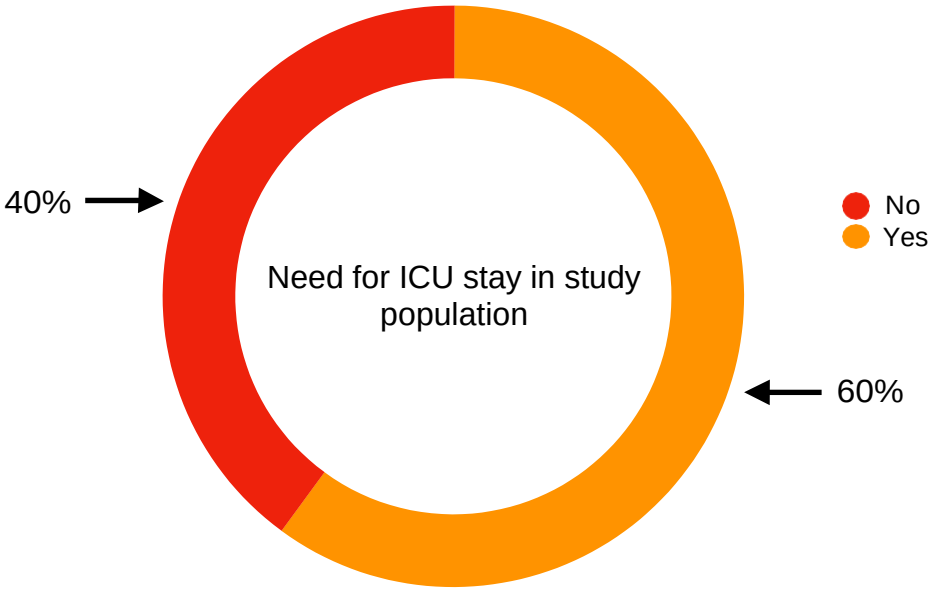


FIGURE 33 : NEED FOR ICU STAY IN STUDY POPULATION.

Within our research cohort, a total of 60 patients, constituting 60% of the population, experienced a post-operative ICU stay.The average duration of ICU stay across these patients was calculated to be 6.29 days. Notably, the range of ICU stays varied, with the shortest stay recorded at 1 day and the longest at 29 days.

TABLE 32 : ICU STAY IN VARIOUS GROUPS IN STUDY POPULATION.

ICU Stay in study population							
Group A		Group B		Group C		F	p-value
Mean	SD	Mean	SD	Mean	SD		
3.00	1.41	8.11	3.79	10.29	7.04	3.451	0.038

Patients with higher scores experienced a notably longer ICU stay. In study group A, the average ICU stay was 3 ± 1.41 days, in group B it was 8.11 ± 3.79 days, and in group C it was 10.29 ± 7.04 days. The p-value obtained in our research was 0.038, which is highly significant .

TABLE 33 : MEAN ICU STAY COMPARED BETWEEN VARIOUS STUDY GROUPS.

A VS B	A VS C	B VS C
p-value	p-value	p-value
0.088	0.016	0.145

In our research, we discovered a notable rise in the average ICU duration when comparing study groups A and C (p-value 0.016). However, there was no significant difference in the average ICU stay when comparing study groups A and B (p-value 0.088) or study groups B and C (p-value 0.145).

TABLE 34 :SHOWING COMPARISON OF NEED OF POST OPERATIVE ICU VARIOUS STUDY GROUPS.

ICU STAY	MPI						Total	Chi-square value	p-value
	A		B		C				
No	23	85.2%	11	28.2%	6	17.6%	40	32.308	0.001
Yes	4	14.8%	28	71.8%	28	82.4%	60		

Out of 100 patients in our study 60 patients had postoperative Icu stay while 40 patients did not require any ICU stay. 4(14.8%) patient in study Group A , 28(71.8%) patients in group B and 28(82.4%) patients in group C had post operative ICU stay. On comparing need for ICU stay in various groups we found statistically significant results with a p value of 0.001. Thus the number of patients requiring post operative ICU stay increased with increasing MPI score.

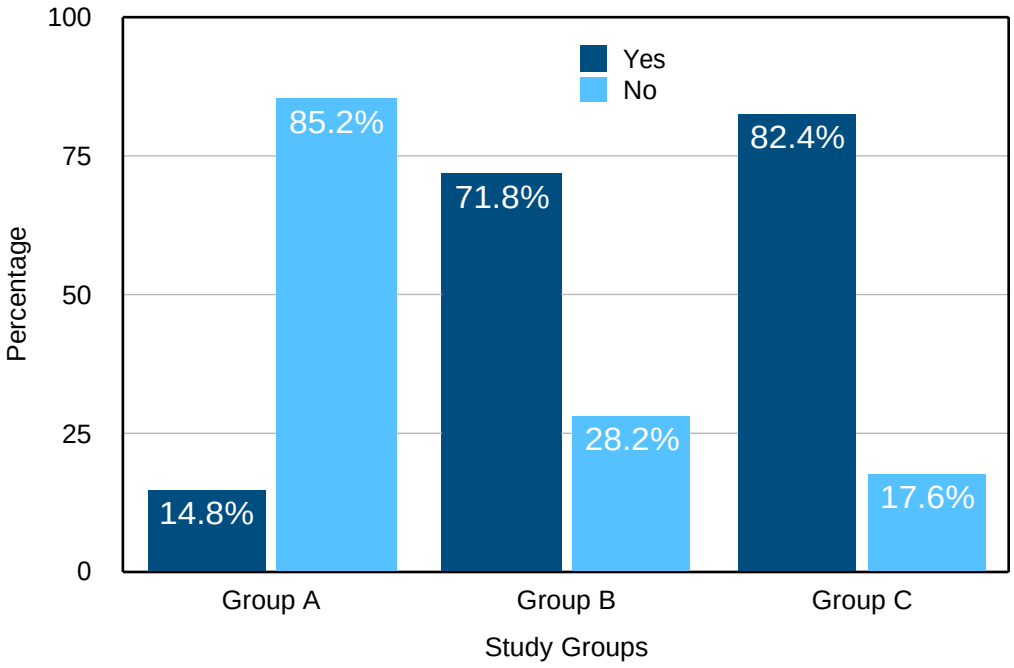


FIGURE 34 : SHOWING COMPARISON OF NEED OF POST OPERATIVE ICU VARIOUS STUDY GROUPS.

TABLE 35: ASSOCIATION OF RISK FACTORS WITH MORTALITY

RISK FACTOR	TOTAL NUMBER OF PATIENTS N=100	OUTCOME		CHI-SQUARE	P VALUE
		DISCHARGE N=77	DEATH N=23		
AGE > 50 YEARS	42	25	17	12.488	0.001
FEMALE SEX	34	25	9	0.350	0.554
ORGAN FAILURE	33	13	20	39.331	0.001
MALIGNANCY	1	1	0	0.302	0.583
PRE OPERATIVE DURATION OF PERITONITIS >24 HOURS	92	69	23	2.597	0.192
ORIGIN OF SEPSIS NON COLONIC	88	69	19	0.822	0.464
DIFFUSE GENERALIZED PERITONITIS	82	59	23	6.557	0.011
CLEAR EXUDATES	0	0	0	20.979	0.001
CLOUDY EXUDATE	6	6	0		
PURULENT EXUDATE	66	58	8		
FECAL EXUDATE	28	13	15		
TOTAL	100	77 (77%)	23 (23%)	-	-

By using chi square test and calculation p- values for various variable , Age> 50 years, preoperative organ failure, presence of diffuse generalised peritonitis and present of purulent/ fecal exudate showed statistical significance in predicting mortality

IMAGE 1 : INTRAOPERATIVE VIEW OF SMALL BOWEL PERFORATION - ILEAL PERFORATION.

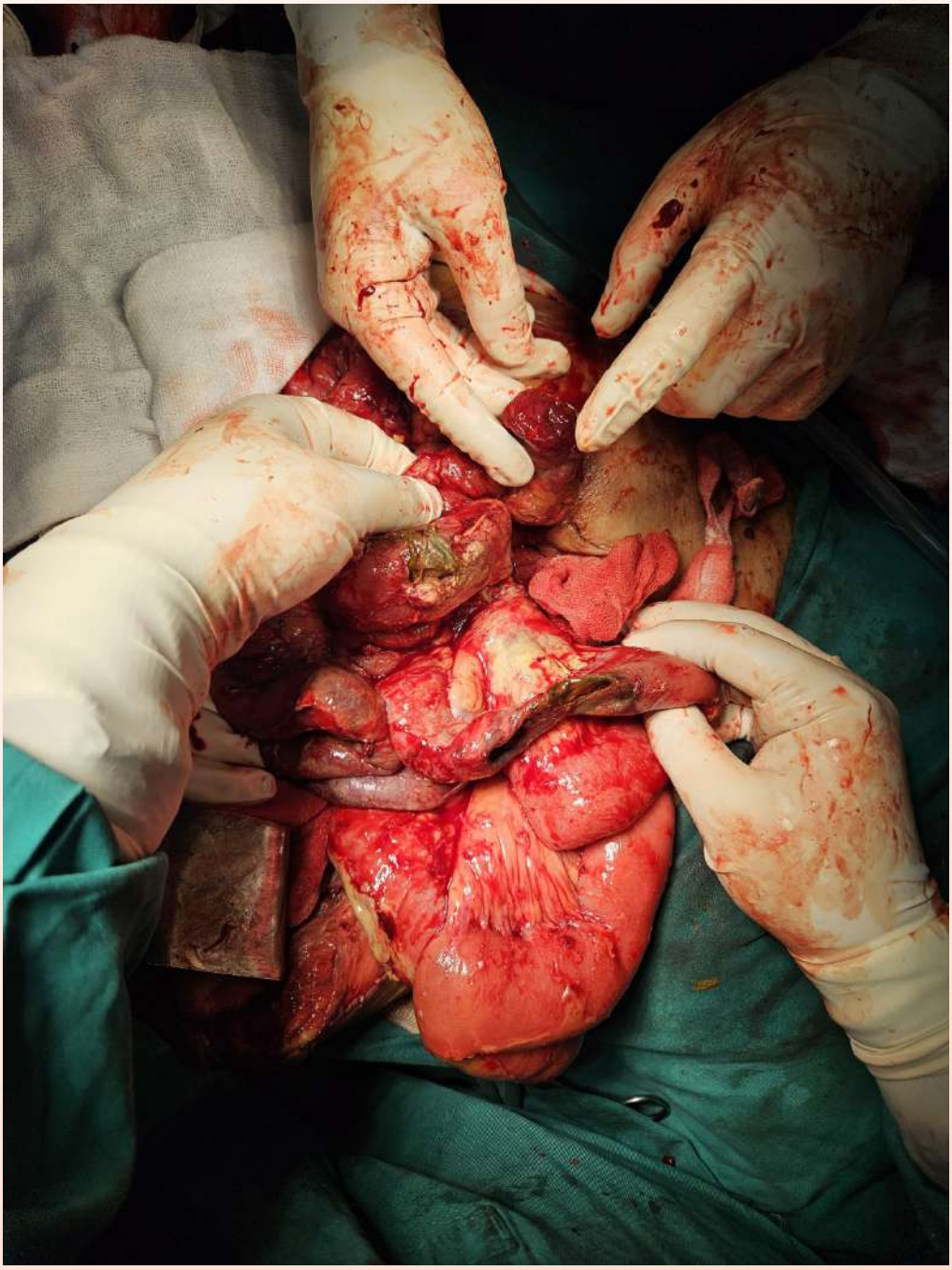


IMAGE 2: INTRAOPERATIVE VIEW OF MULTIPLE SMALL BOWEL PERFORATIONS.

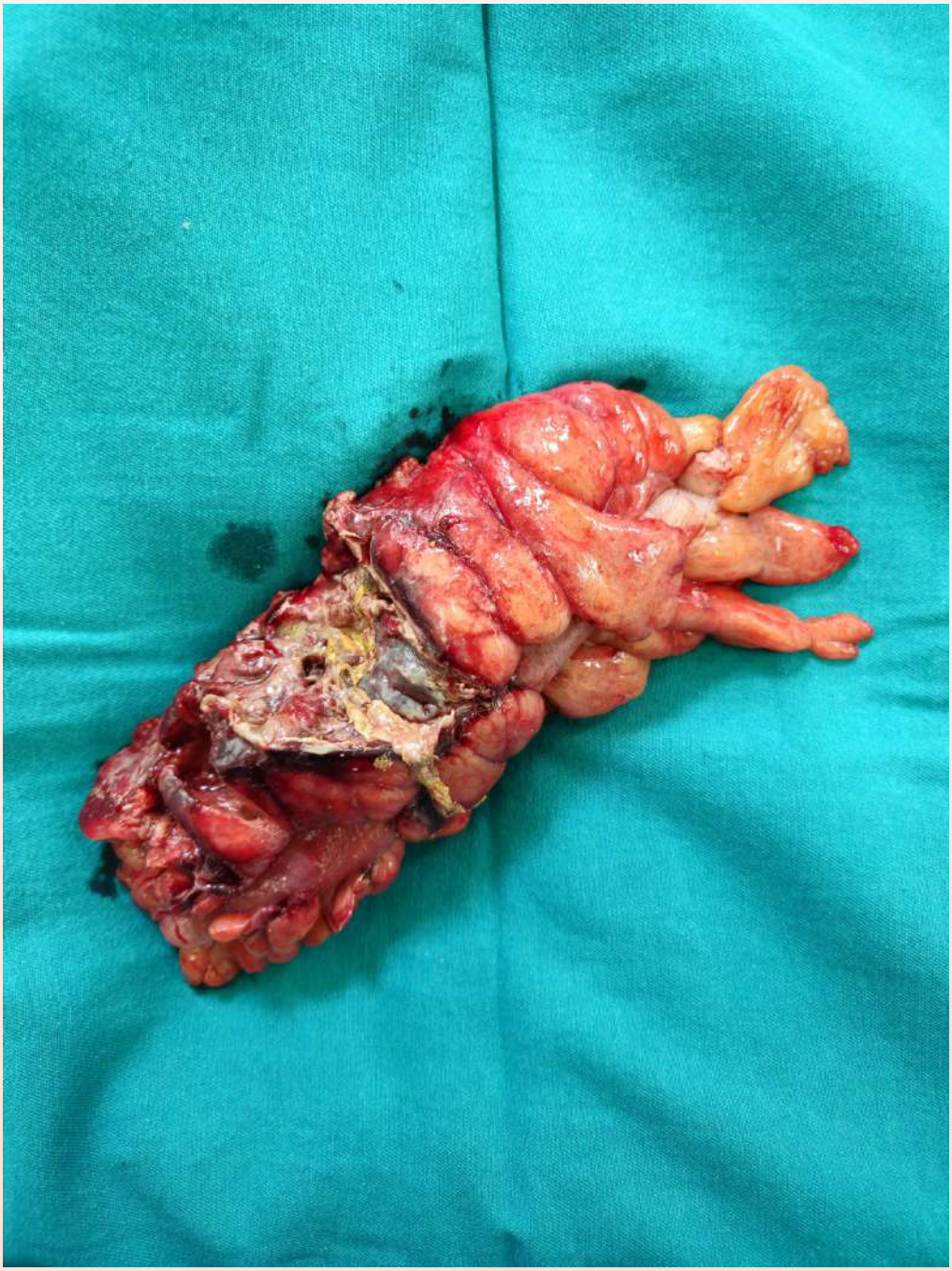


IMAGE 3: SPECIMEN SHOWING SIGMOID COLON PERFORATION

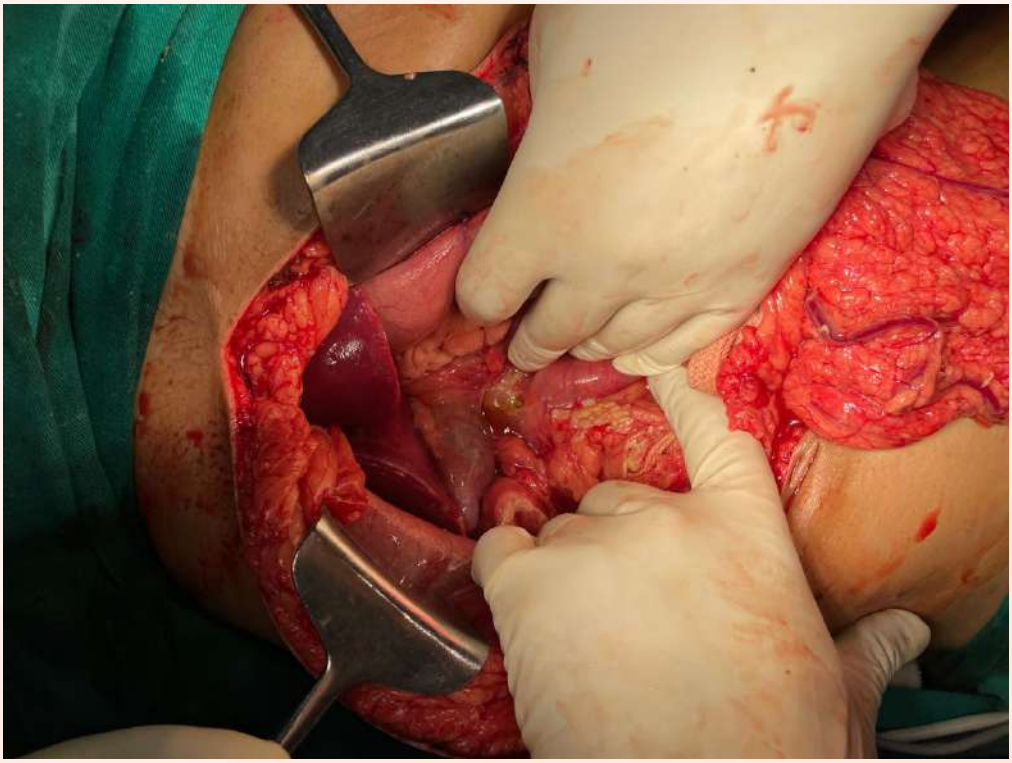


IMAGE 4: INTRAOPERATIVE VIEW OF DUODENAL PERFORATION.

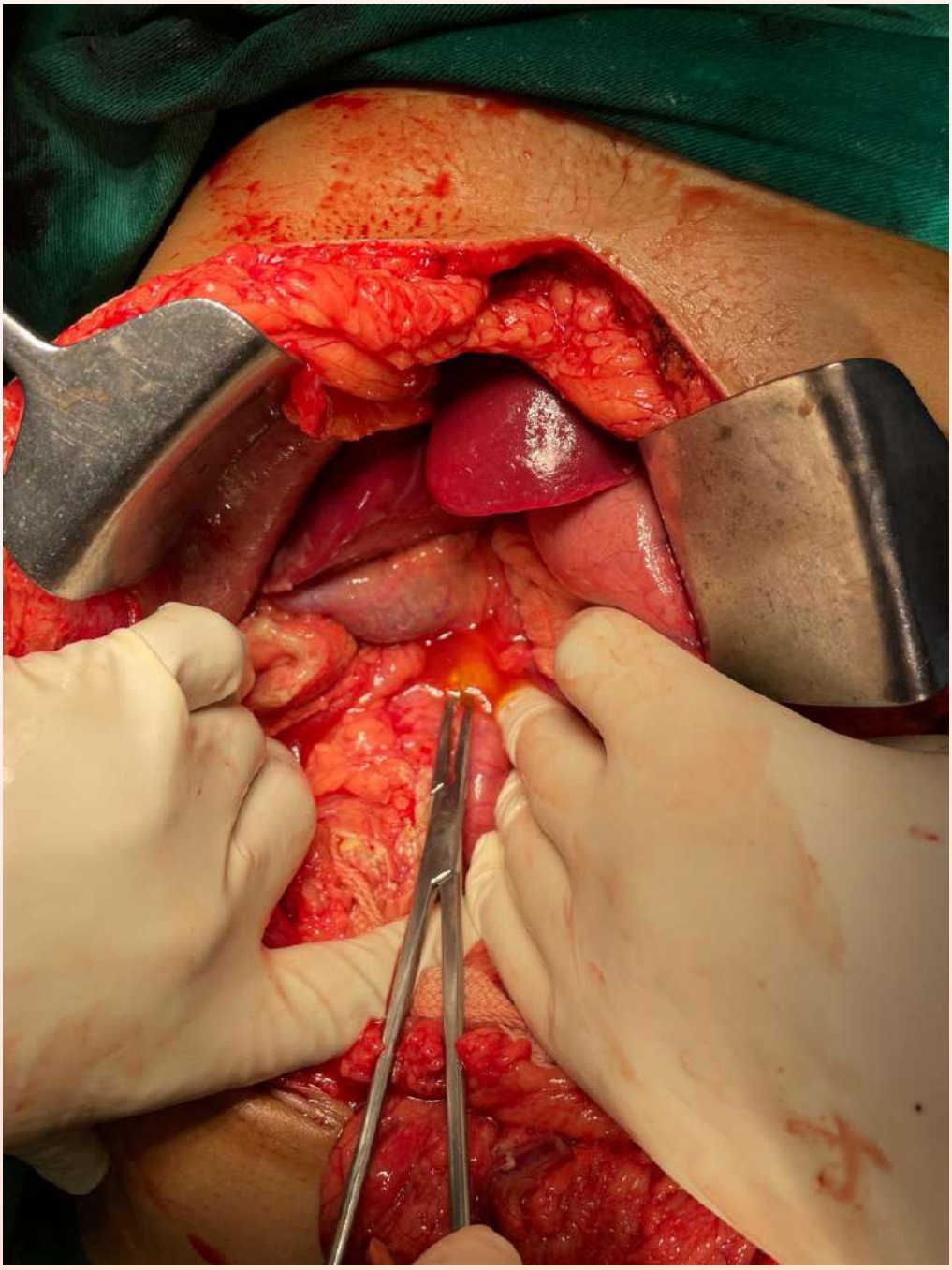


IMAGE 5: INTRAOPERATIVE VIEW OF DUODENAL PERFORATION.

IMAGE 6: INTRAOPERATIVE VIEW OF SMALL BOWEL PERFORATION.

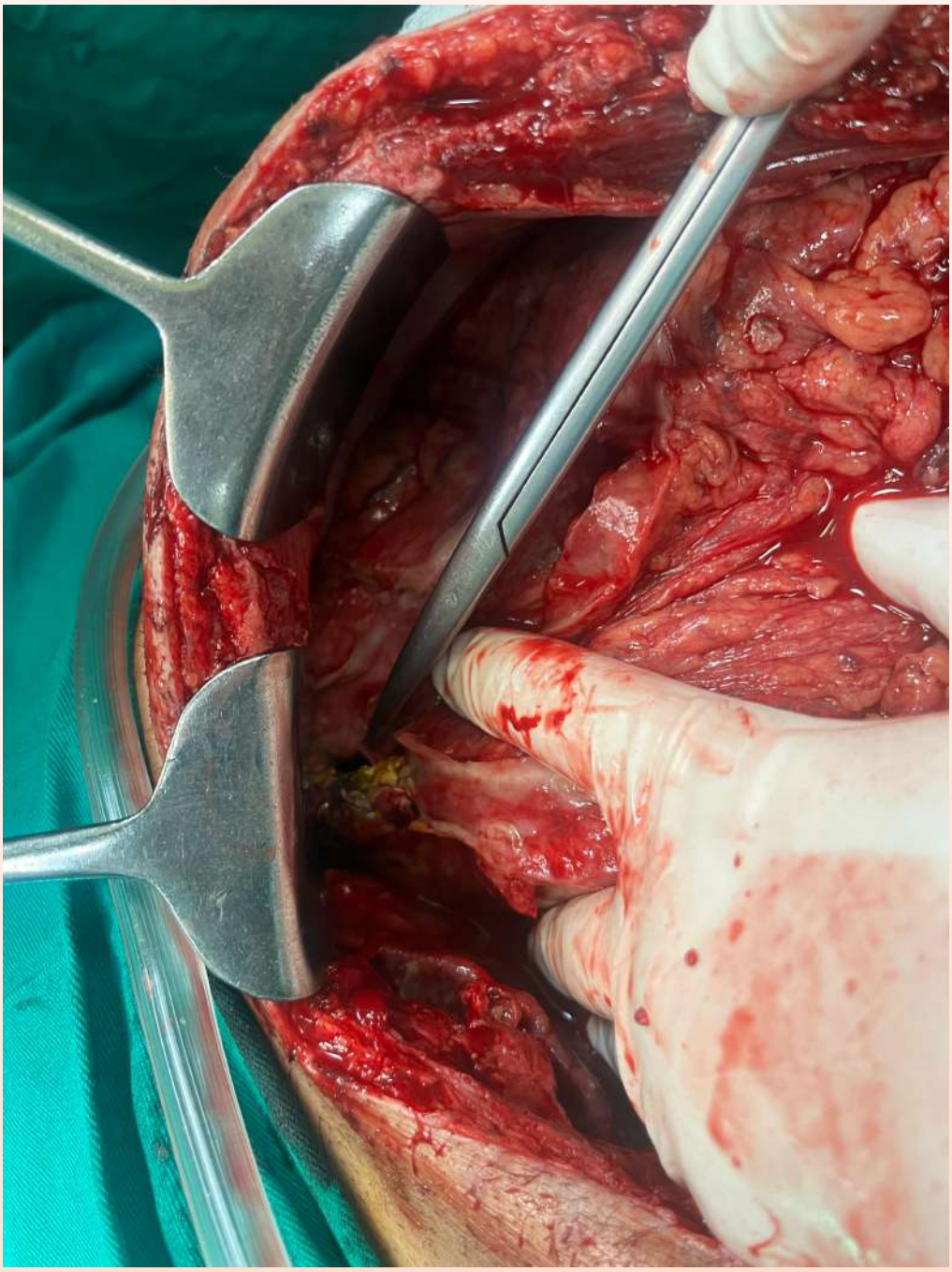


IMAGE 7: INTRAOPERATIVE VIEW OF GASTRIC PERFORATION.

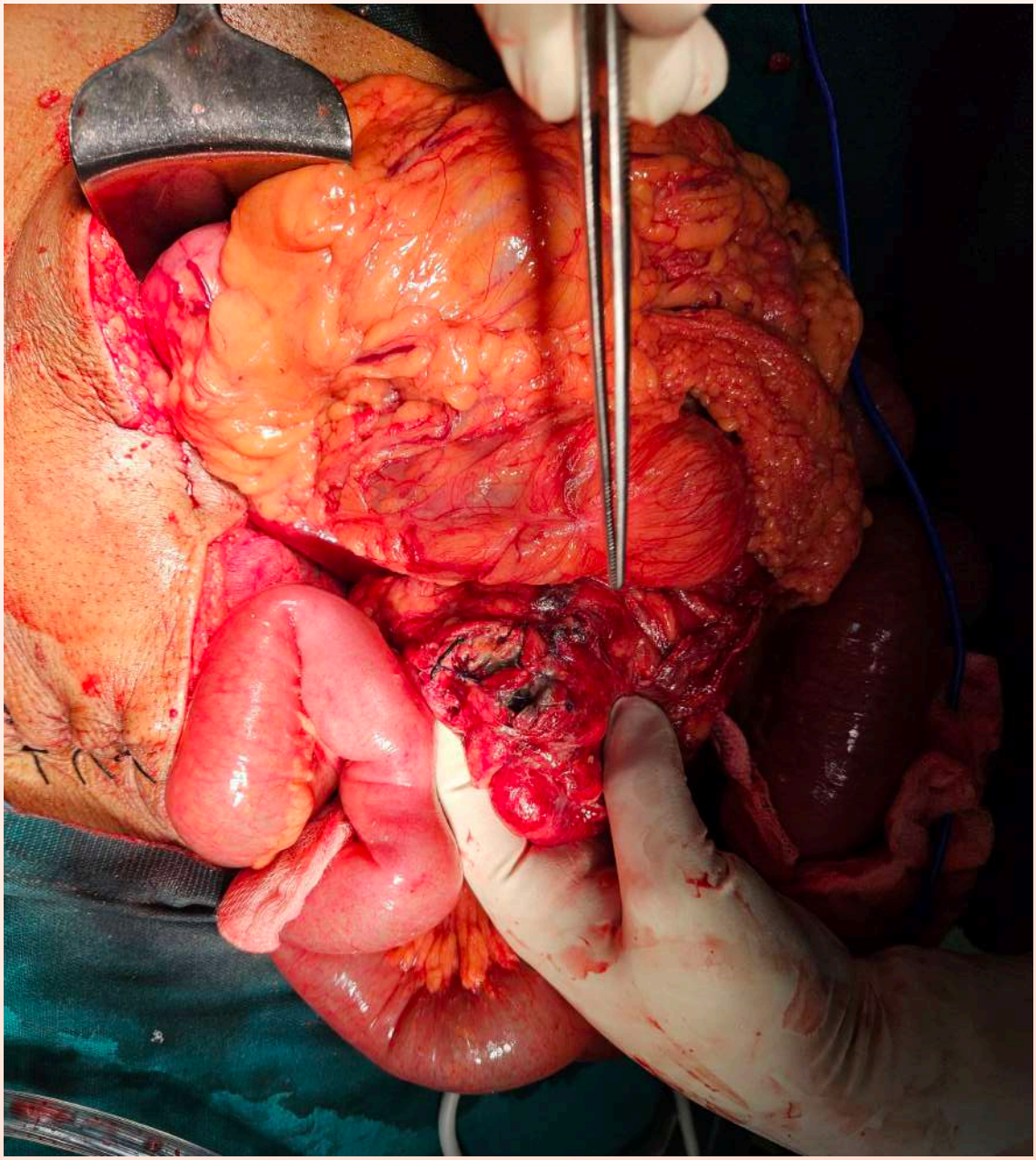


IMAGE 8: INTRAOPERATIVE VIEW SHOWING ANASTOMOTIC LEAK IN A PATIENT.

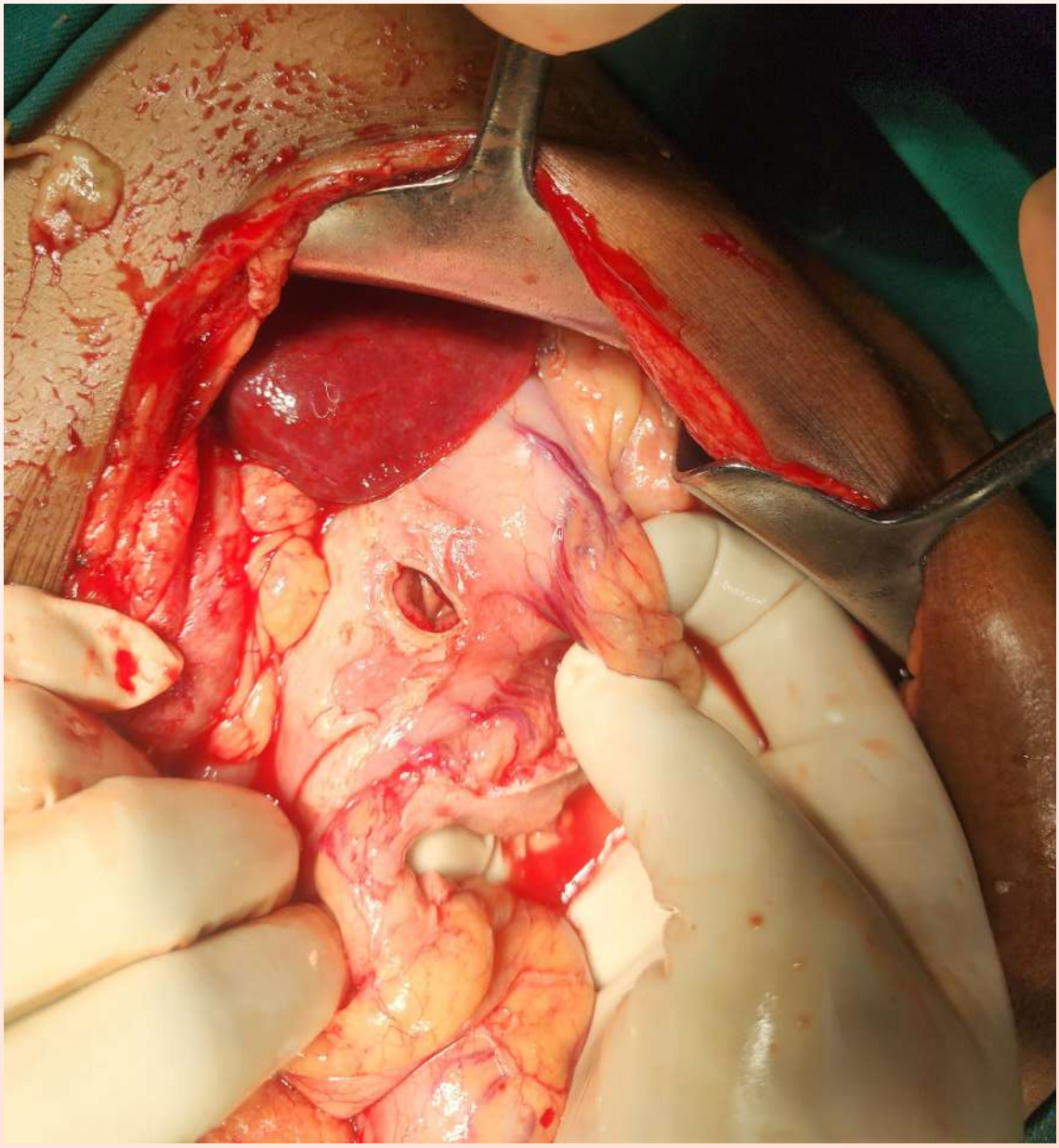


IMAGE 9: INTRAOPERATIVE VIEW SHOWING PERFORATION IN ANTERIOR WALL OF STOMACH.

DISCUSSION

This study was conducted in the Department of General Surgery at Dayanand Medical College and Hospital, Ludhiana, Punjab, India. 100 patients were enrolled in the study. Patients presenting in Department of Surgery through emergency with perforation were enrolled in the study. The data collected was evaluated and the following analysis was made.

AGE

A total of 100 patients were studied. The mean age of the study group was 47.64 years. The age group of 31-50 years contains maximum (39%) patients followed by 51-70 years (30%). The youngest patients was 18 years old and oldest was 90 years old. In our study 58 patients belonged to age group of <50 years while 42 patients were of age >50 years. There was a positive significance of age >50 years with mortality (p value 0.001). Thus, a higher mortality rate was associated with increasing age.

Our results are in concordance with study conducted by Harshal Ramteke et al where it is seen that with increasing age the mortality rate increases. The patients who were > 50 years of age had a higher mortality rate (35.3%) while those with age less than fifty years had a lower mortality rate (33.6%). P value in their study was 0.007 which is statistically significant.[32]

Our findings are also similar with a research by Sanchit et al. that found a higher mortality rate with a p value of less than 0.0001 for those over 50 years of age.[33]

Similar results have been observed in study conducted by Kumar Gaurav et al in which patients over 50 years of age exhibited a higher mortality rate (18/43, 42%) compared to those under 50 years old

(13/68, 19%). The calculated p-value of 0.0092 indicated a statistically significant increase in mortality among individuals over 50 years old.[23]

SEX

In our study we observed that the number of males was 66 (66%) while number of females was 34 (34%). Out of 66 male patients death was recorded in 8(61.5%) patients Out of 34 female patients death was recorded in 5 (38.5%). In correlation of sex with incidence of mortality, p value in our study was0.922 which is statistically insignificant &shows contrast results with MPI. There was a male preponderance with male is to female ratio of approximately 2:1 (66 males and 34 females)

Similar findings were noted in a study by Gaurav et al., where the “male to female” ratio was higher (male: female = 3.26:1) and the p-value for gender-specific mortality was 0.385.[23]

Another study by Sanjeev Sharma et al. revealed that having female sex was a major risk factor for mortality. The mortality rate for male patients was 9.76%, whereas the mortality rate for female patients was 55.56% (P = 0.001). These findings differ with the current study, in which gender and mortality outcomes are statistically non-significant (0.922).[19]

PREOPERATIVE ORGAN FAILURE

Our study found that 33 (33%) patients had organ failure prior to surgery, while 67 (67%) patients had no organ failure. Out of 33 (33%) patients with organ failure, 12 (12/13) individuals died, accounting for 92.3 percent. Out of 67 (67%) patients who had no organ failure prior to surgery, one (1/13, or 7.7%) did not survive. In our investigation, the p-value for the association of organ failure with the incidence of death was 0.001, indicating a significant relationship statistically between organ failure and the incidence of mortality.

Study conducted by Sanjeev Sharma et al. also showed organ failure, a significant risk factor as patients having organ failure had mortality of 75% as compared to no organ failure having mortality of 7.14% ($P < 0.001$) .[19]

Similar findings were observed in a study done by Sanchit Jain et al. on 150 patients; 13 died, 11 of them had organ failure, suggesting that organ failure is “associated” with a higher MPI score and a higher incidence of mortality.[33]

In Another Study conducted by Sitaram Yadav et al on 100 patient 18 patients who had organ failure preoperatively , Out of 18 patients who had organ failure, 15 of them died resulting in a mortality rate of 83.3% compared to 12 deaths (14.63%) out of 82 who showed no evidence of organ failure(p value <0.001) emphasising the impact of organ failure on mortality.[34]

MALIGNANCY

Out of 100 patients in our study 1(1%) patient had malignancy while 99(99%) patients had no evidence of malignancy. 1(1/77 i.e. 1.3%) patient with malignancy was discharged and there were 0(0%) mortalities in patient with malignancy. 76 (76/77 i.e. 98.7%) patients which were discharged had no evidence of malignancy. In correlation between presence of malignancy with incidence of mortality, our study show statistically insignificant result with p- value of 0.583 indicating no link between presence of malignancy and mortality.

Our results are in discordance with study done by Harshal Ramteke et al. The patients with perforation due to associated malignancy had statistically significant (p=0.013) higher rates of mortality (2/3, i.e. 66.67%) in comparison to those with benign etiology (6/47, 12.8%).[32]

PREOPERATIVE DURATION OF PERITONITIS

We concluded in our study that 92 (92%) patients presented after “twenty four hours” of onset of peritonitis symptoms whereas 8(8%) patients presented within 24 hours of onset of symptoms. Out of 92 patients which presented after 24 hours of onset of symptoms 13 patients did not survive. In 8 patients which presented within “24 hours “of onset mortality rate was 0%. In correlation of preoperative duration of peritonitis with incidence of mortality, our study showed statistically insignificant result with p value 0.096 showing no correlation between pre operative duration with incidence of mortality

Similar resulted were noted in study conducted by Harshal Ramteke et al. Delayed presentation of more than 24 hrs before surgery led to an increased mortality risk (8/42, 19% vs 0/8, 0%) but was statistically insignificant (p=0.17) .[32]

Our results are similar to study done by Sachin Murukanahalli Basavaraju et al. in which total 26% of the patients had presented with duration of symptoms<24 hours and 74% of the patients presented with duration of symptoms>24 hours .11% patients who had expired presented with duration of symptoms>24 hours and morbidity also higher for the survived patients. So pre-operative duration of presentation is an important risk factor in predicting morbidity and mortality.[35]

Our results are in partial concordance with study conducted by Sitaram Yadav et al. in which out of the 13 patients with preoperative duration of peritonitis of less than 24 hours, no patient died (similar to present study) . 87 patients who have “ preoperative duration of peritonitis” of more than twenty four hours, 27 patients died and hence preoperative duration of peritonitis of more than 24 hours is an important variable for adverse outcome.[34]

DIFFUSE GENERALIZED PERITONITIS

In our study, 82 patients (82%) had diffuse generalised peritonitis, while 18 (18%) had localised peritonitis. Among patients with diffuse generalised peritonitis, 59 (59/77, or 76.6%) were discharged, whereas 23 (23/23, or 100%) died. In patients with localised peritonitis, 18 (18/77, or 23.4%) were discharged, and there were no mortalities. Our study's p-value of 0.011 indicates a statistically significant correlation between the incidence of death and the kind of peritonitis (localized versus generalized).

Similar findings were reported in a research by Sanjeev Sharma et al. in which patients with diffuse peritonitis saw a death rate of 20.45%, but those with localized peritonitis experienced no mortality at all.[19]

Our result were similar to study conducted by "Ankan Ghosh et al "2023 in which diffuse generalized peritonitis was significantly associated(p value < 0.0001) with higher mortality rate (13-36%).[36]

Similar results were found in study done by Dr. Jacob Antony Chakiath et al 2020. 44(68.75%) patients had diffuse peritonitis and 20 patients had localized peritonitis. There was no mortality in patients with localized peritonitis while among patients with diffuse peritonitis there were 8 deaths with a mortality of 18.8%. The extension of the peritoneal inflammation process was related to increased mortality.[37]

ORIGIN OF SEPSIS (COLONIC /NONCOLONIC) AND MORTALITY

Out of 100 patients in our study in 88(88%) patients the origin of sepsis was non colonic while in the remainder 12(12%) there was colonic in origin. Among 12 patients with colonic origin of sepsis 4(4/23 I.e 17.4%) deaths were noted, 8 (8/88 i.e 10.4%) patients were discharged. Among 88 (88%) patients who had non colonic origin of

sepsis death was reported in 19 (19/88 i.e 82.6%) patients and 69 (69/88 I.e. 89.6%) patients were discharged. In correlation of origin of sepsis (colonic v.s. non colonic) with incidence of mortality p value in our study was0.464 which is statistically insignificant.

Similar results were found in study by Abrar Maqbool Qureshi et al in which the influence of anatomic origin on prognosis, noncolonic origin was not an important risk factor.[26]

Comparable results were found in a study done by Kumar Gaurav et al 2024 in which no significant association was found between origin of sepsis and increased mortality rate (p value 0.316) Most patients had a non-colonic origin of sepsis 107/111 (96%) with mortality of 29/107 (27%).[23]

Our resulted are also in concordance with study done by Dr. Jacob Antony Chakiath et al 2020 in which In correlation between origins of sepsis (colonic Vs non-colonic) with incidence of mortality; p value was 0.435, which is statistically not significant and was in contrast with MPI as introduced by Wacha and Linder where colonic origin of sepsis was considered as a favorable factor.[37]

TYPE OF EXUDATE AND MORTALITY

It was noted in our study that 6 patients had cloudy exudate, 66 had purulent exudate, 28 fecal exudate and none of the patients had clear exudate. intraoperatively. 6(6/77 I.e 7.8%) patients with cloudy exudate were discharged while there were 0 deaths. 58 (58/77 i.e. 75.3%) patients with purulent exudate were discharged while 8(8/23 i.e. 34.8%) patients did not survive. 13(13/77 I.e. 16.9%) patients with fecal exudate were discharged whereas death was recorded in 15(15/23 I.e. 65.2%) patients with fecal exudate. In correlation between type of exudate with incidence of mortality, our study show

statistically significant result with p- value of 0.001 indicating link between type of exudate and mortality.

Similar findings were seen in a 2016 research by Sanjeev Sharma et al., which found that the death rates for patients with exudates that were clear, cloudy, or fecal were 12.5%, 15%, and 100%, respectively. A clinically significant outcome (p = 0.009) was seen in this study.[19]

Comparable results were found in a study done by Ramaswamy Naik M et al 2018. It was found that presence of feculent and purulent exudates was associated with significantly increased postoperative complications. Up to 80% of the patients with clear exudates has no post-operative complications (p<0.005).[38]

Anakin Ghosh et al discovered a significant connection (P VALUE < 0.0001) between the type of exudate and the incidence of mortality. Purulent (4-60%) and feculent (36-100%) exudates resulted in more patient deaths than clear exudates (0-12%). Factors such as the faecal character of exudates were substantially associated with higher mortality rates. The outcomes were comparable to our study.[36]

MANNHEIM PERITONITIS INDEX (MPI)

Based on our analysis, the overall MPI score was below 21 in 27 (27%) patients in MPI category-A between 21 and 29, number of patients is 39 (39%) in MPI category-B, whereas, in MPI category C i.e., score more than 30, number of patients was 34 (34%). (BASED ON table number 10)

When we analysed the outcome of the patients in our study population, it was observed that in study group A (n=27) all 27 patients were discharged and there were 0 deaths. In study group B (n=39) 38 patients (97.4%) patients were discharged while 1 patients (2.6%) did not survive. In study group C(n=34) 12 patients (35.3%) were

discharged, and in 22 patients (64.7%) death was recorded as outcome. This study showed a significant relationship between MPI score and final outcome (p value 0.001).

Similar results were observed in a study conducted by Harshal Ramteke et al, the patients with an MPI score of more than 29 had maximum mortality of 62.5%. Mortality was seen in 37.5% of the patients with MPI scores between 21 and 29, whereas no mortality was recorded in patients with an MPI score of 21.[32]

Our results are also in concordance with A Billing et al, where patients with a score less than 21 the mean mortality rate was 2.3 (range 0-11) per cent, for score 21-29 22.5 (range 10.6-50) per cent and for score greater than 29 59.1 (range 41-87) per cent.[21]

A study conducted by Sitaram Yadav et al, concluded the same results as that of present study where mortality was higher among patients with “MPI Score > 29” (95.65%). And in score <21 mortality rate was 0 and for score 21-29 mortality rate was 80%.[34]

In a study conducted by Murlidhar et al, MPI scores of ≤ 20, 21-29, and ≥ 30 had a mortality of 5%, 14%, and 50% respectively, again emphasising that in patients having MPI score >29 prognosis becomes poor and hence needs aggressive management.[18]

Our results are also similar to the study conducted by Ajaz Ahmed Malik et al, in which there was 0 mortality in MPI scores of <15 and 4% in the patients scoring 16-25 and 82.3% in those with scores of more than 25.[6]

In another retrospective study analysis conducted by Piotr Budzyński et al, covering 168 patients of Polish population concluded the same results as that of present study. The MPI mortality rate was 1.75%,

28.13%, and 50% in groups <21, 21-29, and > 29 points, respectively. This difference was statistically significant (p = 0.0124).[39]

Similar results were seen in a study undertaken by Elizabeth Barrera Melgarejo et al. In this study their observation was a high mortality rate (60%) in group with MPI score >29.[40]

Sanjeev Sharma et al, reported the similar findings, where in patients with a score <21, the mortality rate was 0%, for score 21–27, it was 27.28%, and for score >27, it was 100% ($P < 0.001$). Therefore, indicating that increasing MPI score predicts poor prognosis.[19]

In a study evaluated by Batra P et al, MPI scores of ≤ 20, 21-29, and ≥ 30 had a mortality of 0%, 3.85%, and 20% respectively. These results read also similar to the present study.[9]

Our results are also in concordance with Jacob Antony Chakiath et al, In this study mortality rate among patients with MPI < 21 was 0, MPI score 21 - 29 is 4.35% and MPI score > 29 is 53.85%.[37]

We can conclude the discussion about MPI scoring predicting the outcome in perforation peritonitis by stating that there has been a significant correlation found between the MPI count and the following: surgical wound complications, acidosis, electrolyte imbalance, cardio-respiratory failure, and the need for post-operative intensive care unit treatment.

SUMMARY AND CONCLUSION

A hospital based prospective observational study was conducted on 100 patients presenting to Dayanand Medical College and Hospital, Ludhiana who underwent surgery for perforation peritonitis. In the present study Mannheim Peritonitis Index was used to predict the outcome in the patients of perforation peritonitis. Among all the variables of MPI, following observation were made in present study.

AGE

There was higher mortality rate in patients with age more than 50 years as compared to patients with age less than 50 years of age (P-value 0.001). Thus, increasing age correlated with higher mortality.

SEX

There was male preponderance (Male: Female 66:34) regarding mortality our results were statically insignificant (P-value 0.922).

ORGAN FAILURE

There was high mortality rate in patients presenting with organ failure prior to surgery (P-value 0.001), showing highly significance statistically, emphasising aggressive management.

MALIGNANCY

In present study, out of hundred cases there was only one case of malignancy(1%). As this patient survived, thereby survival rate was 100%. Being very less in number, we could not correlate and statistically we have non-significant results (P-value 0.583).

PREOPERATIVE DURATION OF PERITONITIS

In present study, 92 patients (92%) presented after 24 hours and only 8 patients presented before 24 hours of perforation peritonitis. Statistically, insignificant results were found among both groups. (P-value 0.096)

DIFFUSE GENERALISED PERITONITIS

In present study, we observed high mortality rate in patients having diffuse perforation peritonitis. Out of 82 patients presenting with diffuse peritonitis, 23 did not survive. Whereas, rest all 18 patients were discharged. The P-value in present study was 0.011, demonstrating a statistically significant relationship between the type of peritonitis (generalised / localised) and incidence of mortality.

ORIGIN OF SEPSIS (Colonic/ Non-colonic) AND MORTALITY

Our results were non-significant when we compared mortality among the origin of sepsis i.e., Colonic or non-colonic (P value 0.464)

TYPE OF EXUDATE AND MORTALITY

In present study, the character of the exudate showed high mortality in patients with purulent and feculent exudate as compared to cloudy exudate. All 6 patients with cloudy exudate were discharged, whereas, out of 66, 8 patients presenting with purulent exudate did not survive. Out of total 28 patients with feculent exudate, 15 patients did not survive. Present study showed statistically highly significant result with P value 0.001.

MANNHEIM PERITONITIS INDEX & MORTALITY

When we analysed the outcome of the patients in the study population, we observed that there was 0% mortality in study group A(n=27) i.e., MPI score <21, whereas, it was 64.7% with MPI score <29 and 2.6% with MPI score <21-29.

CONCLUSION

“Mannheim Peritonitis index” is a useful method to determine severity and predict outcome in patients presenting with perforation peritonitis. When predicting mortality in patients with peritonitis caused by hollow viscus perforation, it a less laborious scoring technique and requires fewer laboratory procedures.

When we analysed the outcome of the patients in the study population, we observed that there was 0% mortality with MPI score <21, whereas, it was 64.7% in MPI score <29 and 2.6% with MPI score <21-29.
Higher scores are associated with a worse prognosis and need more extensive care, which makes the application of MPI in clinical practice pertinent and advantageous, particularly in environments with limited resources.

All risk factors included in the Mannheim Peritonitis index namely, presence of organ failure; age>50 years, generalised extension of peritonitis and type of exudate has significant association with adverse outcome (mortality) in present study.

Our study differs from MPI regarding gender. The mortality rate among male and female was non significant statistically. Preoperative duration peritonitis was also not a risk factor as we could not find significant results. We also could not relate MPI index with malignancy as a risk factor as there was only one case with malignancy and perforation peritonitis and this case survived. Our results were statistically therefore, non-significant.

MPI is disease specific, easy scoring system for predicting the mortality in patients with secondary peritonitis. Increasing scores are associated with poorer prognosis, needs intensive management and hence it should be used routinely in clinical practice.

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SR NO.	NAME	AGE	SEX	MRD NO.	SYM. PAIN ABDOMEN	SYM. VOMITING	SYM. ABD DISTENSION	SYM. CONSTIPATION	SYM. FEVER	P/A GUARDING	P/A TENDERNESS	P/A RIGIDITY	TEMP IN DEGREE FARENHEIT	HEART RATE BEATS/MIN	RESP. RATE / MIN	SBP	DBP	SPO2 %	HB. GM/DL	TLC
1	GS	33	M	1458235	YES	NO	NO	YES	NO	YES	YES	YES	97.4	74	22	100	60	95	9.7	12870
2	SS	19	M	1454648	YES	NO	NO	NO	NO	YES	YES	YES	98	114	22	90	60	98	9.6	21700
3	LS	18	M	1491001	YES	NO	NO	NO	YES	YES	YES	YES	100.6	106	20	110	70	98	7.7	21700
4	DK	38	M	1449185	YES	YES	YES	YES	YES	YES	YES	YES	97.8	104	20	120	60	97	8.2	11700
5	AK	35	M	1503497	YES	NO	NO	NO	YES	YES	YES	YES	98	142	30	180	100	75	8.9	9700
6	SB	78	M	1483058	YES	NO	NO	NO	NO	YES	YES	YES	97.8	103	22	110	70	88	10.1	15400
7	NS	39	M	1467635	YES	NO	YES	YES	NO	YES	YES	YES	99	130	24	110	70	94	12.2	1900
8	NB	65	M	1465385	YES	NO	YES	YES	NO	YES	YES	YES	99	106	22	130	70	98	8.6	1900
9	V	25	M	1454699	YES	NO	YES	NO	NO	YES	YES	YES	99	104	22	100	60	98	13.2	9500
10	SK	42	M	1493246	YES	YES	NO	NO	NO	YES	YES	YES	97.9	104	20	120	70	88	7.9	18100
11	CD	66	M	1490488	YES	NO	NO	YES	NO	YES	YES	YES	99	108	24	80	60	80	12.8	13300
12	RS	58	M	1491642	YES	NO	NO	NO	NO	YES	YES	YES	97	116	20	100	60	88	11.4	17300
13	GS	24	M	1494469	YES	NO	YES	NO	NO	YES	YES	YES	98	130	24			88	12.4	2160
14	MB	55	F	1532186	YES	NO	NO	NO	YES	YES	YES	NO	98	88	20			91	7.2	6800
15	CK	75	F	1511162	YES	YES	YES	YES	NO	YES	YES	YES	97	106	22	120	80	91	8.1	21600
16	DB	26	M	1483577	YES	NO	YES	NO	YES	YES	YES	YES	100	134	26	60		95	10.8	9400
17	RB	50	F	1474370	YES	NO	YES	YES	NO	YES	YES	YES	100	70	22	180	100	95	7.4	8900
18	PA	44	F	1516329	YES	YES	YES	NO	YES	YES	YES	YES	98	136	16	100	60	98	7.7	2630
19	RS	60	M	1622301	YES	NO	YES	NO	NO	YES	YES	YES	97	102	22	140	80	95	12.3	15300
20	RK	26	F	1318722	YES	YES	NO	NO	NO	YES	YES	YES	99	76	20	100	70	98	8.1	16300
21	SK	60	F	1608367	NO	NO	YES	YES	NO	YES	YES	YES	99	96	20	160	90	98	11.1	7440
22	RK	58	F	1567627	YES	YES	NO	NO	NO	NO	YES	NO	98	104	22	80	50	98	10.9	11900
23	BR	66	M	1505641	YES	NO	NO	YES	NO	NO	YES	NO	96	132	22	80	50	95	13.9	16100
24	AK	40	F	248355	YES	NO	NO	NO	NO	YES	YES	YES	101	138	20	110	70	99	8.9	9700

SR NO.	PTI	INR	RBS. MG/DL	S SODIUM. MMOL/L	S. POTASSIUM MMOL/L	S. CHLORIDE MMOL/L	BLOOD UREA. MG/DL	S. CREATININE MG/DL	PAO2. MMHG	PACO2. MMHG	XRAY ERECT	XRAY SUPINE	USG W/A
1	15.6	1.43	79	137	3.72	95	37	1.3	215	41	MULTIPLE AIR FLUID LEVELS	DILATED GUT LOOPS	
2	14.3	1.31	122	143	3.97	104	21	0.99	93	45			
3	15	1.4	88	135	3.92	101	24	0.57	77	39			MULTIPLE INTRA ABDOMINAL AIR CONTAINING COLLECTIONS IN PELVIS RIF,LIF AND LEFT LUMBAR REGION. POSSIBILITY OF HOLLOW VISCUS PERFORATION
4	17.6	1.61	86	130	3.79	99	26	0.58	66	43	PNEUMOPERITONEUM WITH DILATED GUT LOOPS		
5	19.6	1.79	136	135	3.24	99	41	1.32	108	74			
6	16.1	1.47	105	134	3.53	92	77	2.19	65	38	PNEUMOPERITONEUM		
7	15.2	1.39	126	144	4.13	110	107	1.34	56	32	PNEUMOPERITONEUM		
8	11.8	1.08	74	135	3.6	99	143	1.97	54	31	PNEUMOPERITONEUM		
9	15.6	1.43	104	139	4.55	102	41	1.36	102	36	PNEUMOPERITONEUM		
10	16	1.46	125	134	3.82	96	22	0.69	50	39	PNEUMOPERITONEUM		
11	14.9	1.36	129	136	5.98	108	71	2.06	44	31	PNEUMOPERITONEUM		
12	14.2	1.3	236	152	5.89	114	65	1.42	130	28	DILATED GUT LOOPS SEEN IN RIF		MILD ASCITES
13	15.9	1.45	153	154	3.81	121	45	1.64	84	25			SIGNIFICANT FREE FLUID IN PERITONEAL CAVITY
14	21.5	1.96	110	132	3.5	104	38	1.22	67	25	PNEUMOPERITONEUM	MULTIPLE DILATED GUT LOOPS	FREE FLUID SEEN IN PERITONEAL CAVITY
15	20.6	1.88	106	160	5.79	100	122	2.25	50	45	SIGNIFICANT PNEUMOPERITONEUM WITH DILATED JEJUNAL LOOPS		
16	19.8	1.78	83	133	4.61	100	51	1	82	41	PNEUMOPERITONEUM		
17	17	1.55	142	147	3.45	109	24	0.64	57	37	PNEUMOPERITONEUM		
18	14.4	1.3	106	132	5.99	103	59	0.39	68	26	PNEUMOPERITONEUM		
19	14.4	1.5	216	132	3.95	94	42	1.02	90	42	PNEUMOPERITONEUM		
20	12	1.1	86	135	4.07	102	47	0.86	84	32	PNEUMOPERITONEUM		
21	14.5	1.33	98	140	3.27	105	19	0.47	72	31	PNEUMOPERITONEUM		
22	13.6	1.2	97	138	4.11	112	41	1.31	68	24			
23	12.4	1.14	234	161	2.66	120	165	2.25	61	39	PNEUMOPERITONEUM WITH DILATED GUT LOOPS	MULTIPLE DILATED GUT LOOPS	
24	10.6	0.97	110	136	3.75	102	25	0.59	76	29	AIR FLUID LEVELS		SUGGESTIVE OF APPENDICULAR PERFORATION

SR NO.	CECT W/A	MPI AGE >50 YEARS	MPI FEMALE GENDER	MPI ORGAN FAILURE	MPI MALIGNANCY	MPI PERITONITIS >24 HOURS	MPI ORIGIN OF SEPSIS NOT COLONIC	MPI DIFFUSED GENERALIZED PERITONITIS	MPI FLUID ANALYSIS CLEAR	MPI FLUID ANALYSIS CLOUDY/PURULENT	MPI FLUID ANALYSIS FAECAL	MPI SCORE	MPI CATEGORY. A/B/C
1	ILL DEFINED HYPODENSE AIR POCKETS NEAR TIP OF APPENDIX. PERFORATED APPENDIX SEEN	NO	NO	NO	NO	YES	YES	YES	NO	PURULENT		20	A
2		NO	NO	YES	NO	NO	YES	YES	NO	CLOUDY		23	B
3		NO	NO	NO	NO	YES	YES	YES	NO	PURULENT		20	A
4		NO	NO	NO	NO	YES	YES	YES	NO		FAECAL	26	B
5		NO	NO	YES	NO	YES	YES	YES	NO		FAECAL	33	C
6		YES	NO	NO	NO	YES	YES	YES	NO	CLOUDY		25	B
7		NO	NO	YES	NO	YES	YES	YES	NO		FAECAL	33	C
8	MILD ASCITES PNEUMOPERITONEUM. DILATED GUT LOOPS	YES	YES	NO	NO	YES	YES	YES	NO	PURULENT		30	C
9		NO	NO	NO	NO	NO	YES	YES	NO	PURULENT		16	A
10	ON GIVING POSITIVE CONTRAST ORALLY DEFECT MEASURING APPROX 8MM SEEN IN D1 WITH LEAK OF CONTRAST	NO	NO	YES	NO	YES	YES	YES	NO	PURULENT		27	B
11	LEAKAGE OF POSITIVE ORAL CONTRAST FROM D1 PART OF DUODENUM COLLECTION IN HEPATODUODENAL LIGAMENT	YES	NO	YES	NO	YES	YES	YES	NO	PURULENT		32	C
12	APPENDIX IS DILATED, AIR FILLED WITH APPENDICOLITH T BASE WITH CECAL BASE THICKENING , PNEUMOPERITONEUM , GANGRENOUS APPENDICITIS	YES	NO	YES	NO	YES	YES	YES	NO		FAECAL	38	C
13	SIGNIFICANT FLUID IN PERITONEAL CAVITY WITH MODERATE PNEUMOPERITONEUM	NO	NO	YES	NO	YES	YES	YES	NO	PURULENT		27	B
14		YES	YES	YES	NO	YES	YES	YES	NO		FAECAL	43	C
15	SIGNIFICANT PNEUMOPERITONEUM WITH STRICTURE IN MIDLINE WITH MULTILOCULATED COLLECTION IN PELVIS	YES	YES	YES	NO	YES	YES	YES	NO		FAECAL	43	C
16		NO	NO	NO	NO	YES	YES	YES	NO		FAECAL	26	B
17	MODERATE PONEUMOPERITONEUM	NO	YES	NO	NO	YES	YES	YES	NO		FAECAL	31	C
18	MILD PNEUMOPERITONEUM WITH LOCULATED FLUID IN ABDOMEN WITH PROMINENT JEJUNAL LOOPS	NO	YES	NO	NO	YES	NO	YES	NO	PURULENT		25	B
19		YES	NO	NO	NO	YES	YES	YES	NO	PURULENT		25	B
20		NO	YES	NO	NO	YES	YES	YES	NO	CLOUDY		21	B
21		YES	YES	NO	NO	YES	NO	YES	NO		FAECAL	32	C
22	PNEUMOPERITONEUM	YES	YES	NO	NO	YES	YES	YES	NO	PURULENT		30	C
23		YES	NO	YES	NO	YES	YES	YES	NO	PURULENT		32	C
24		NO	YES	NO	NO	NO	YES	NO	NO	CLOUDY		15	A

SR NO.	SITE OF PERFORATION	SURGICAL PROCEDURE PROPOSED	SURGICAL PROCEDURE EXECUTED	MORBIDITY A. WOUND INFECTION	MORBIDITY B. WOUND DEHISCENCE	MORBIDITY C. REOPERATION	MORBIDITY D. INTRAABDOMINAL COLLECTION	MORBIDITY E. ANASTOMOTIC LEAK	MORBIDITY F. DIALYSIS
1	APPENDICULAR PERFORATIION	EXPLORATORY LAPAROTOMY WITH APPENDECTOMY	EXPLORATORY LAPAROTOMY WITH APPENDECTOMY	NO	NO	NO	NO	NO	NO
2	GASTRIC PERFORATION	EXPLORATORY LAPAROTOMY	EXPLORATORY LAPAROTOMY WITH DUODENAL PERFORATIONREPAIR	NO	NO	NO	NO	NO	NO
3	APPENDICULAR PERFORATIION	EXPLORATORY LAPAROTOMY WITH APPENDECTOMY	EXPLORATORY LAPAROTOMY WITH COLLECTION DRAINAGE APPENDECTOMY WITH. PERITONEAL LAVAGE	NO	NO	NO	NO	NO	NO
4	ILEAL PERFORATION	EXPLORATORY LAPAROTOMY	EXPLORATORY LAPAROTOMY WITH. PERITONEAL LAVAGE WITH LOOP ILEOSTOMY	NO	NO	NO	YES	NO	NO
5	ILEAL PERFORATION	EXPLORATORY LAPAROTOMY	EXPLORATORY LAPAROTOMY WITH PRIMARY REPAIR OF ILEAL PERFORATIONCWITH LOOP ILEOSTOMY	NO	NO	NO	NO	NO	NO
6	JEJUNAL PERFORATION	EXPLORATORY LAPAROTOMY	EXPLORATORY LAPAROTOMY WITH RESECTION AND END TO END ANASTOMOSIS	YES	NO	NO	NO	NO	NO
7	ILEAL PERFORATION	EXPLORATORY LAPAROTOMY	EXPLORATORY LAPAROTOMY WITH PRIMARY REPAIR OF ILEAL PERFORATIONWITH LOOP ILEOSTOMY WITH CHOLECYSTECTOMY WITH PERITONEAL LAVAGE WITH PERITONEAL DRAINAGE	NO	NO	NO	NO	NO	NO
8	ILEAL PERFORATION	EXPLORATORY LAPAROTOMY	EXPLORATORY LAPAROTOMY WITH RESECTION AND END TO END ANASTOMOSIS WITH PROXIMAL LOOP ILEOSTOMY	NO	NO	NO	NO	NO	NO
9	ILEAL PERFORATION	EXPLORATORY LAPAROTOMY	EXPLORATORY LAPAROTOMY WITH PRIMARY REPAIR OF ILEAL PERFORATIONWITH LOOP ILEOSTOMY	NO	NO	NO	YES	NO	NO
10	GASTRIC PERFORATION	EXPLORATORY LAPAROTOMY	EXPLORATORY LAPAROTOMY WITH MODIFIED GRAHAMS PATCH REPAIR WITH FEEDING JEJUNOSTOMY WITH PERITONEAL DRAINAGE WITH PERITONEAL LAVAGE	NO	NO	NO	YES	NO	NO
11	GASTRIC PERFORATION	EXPLORATORY LAPAROTOMY	EXPLORATORY LAPAROTOMY WITH MODIFIED GRAHAMS PATCH REPAIR WITH FEEDING JEJUNOSTOMY WITH PERITONEAL DRAINAGE WITH PERITONEAL LAVAGE	NO	NO	NO	YES	NO	NO
12	CECAL PERFORATION	EXPLORATORY LAPAROTOMY	EXPLORATORY LAPAROTOMY WITH APPENDECTOMY WITH PROXIMAL LOOP ILEOSTOMY	NO	NO	NO	NO	NO	NO
13	GASTRIC PERFORATION	EXPLORATORY LAPAROTOMY	EXPLORATORY LAPAROTOMY WITH MODIFIED GRAHAMS PATCH REPAIR WITH FEEDING JEJUNOSTOMY WITH PERITONEAL DRAINAGE WITH PERITONEAL LAVAGE	NO	NO	NO	NO	NO	NO
14	ILEAL PERFORATION	EXPLORATORY LAPAROTOMY	EXPLORATORY LAPAROTOMY WITH PRIMARY REPAIR OF ILEAL PERFORATIONWITH LOOP ILEOSTOMY	NO	NO	NO	NO	NO	NO
15	ILEAL PERFORATION	EXPLORATORY LAPAROTOMY	EXPLORATORY LAPAROTOMY WITH. PERITONEAL LAVAGE WITH LOOP ILEOSTOMY	NO	NO	NO	NO	NO	NO
16	ILEAL PERFORATION	EXPLORATORY LAPAROTOMY	EXPLORATORY LAPAROTOMY WITH. PERITONEAL LAVAGE WITH LOOP ILEOSTOMY	NO	NO	NO	NO	NO	NO
17	ILEAL PERFORATION	EXPLORATORY LAPAROTOMY	EXPLORATORY LAPAROTOMY WITH TERMINAL ILEAL RESECTION WITH END ILEOSTOMY	YES	NO	NO	NO	NO	NO
18	ILEAL PERFORATION	EXPLORATORY LAPAROTOMY	EXPLORATORY LAPAROTOMY WITH. PERITONEAL LAVAGE WITH LOOP ILEOSTOMY	NO	NO	NO	NO	NO	NO
19	ILEAL PERFORATION	EXPLORATORY LAPAROTOMY	EXPLORATORY LAPAROTOMY WITH PRIMARY REPAIR OF ILEAL PERFORATIONWITH LOOP ILEOSTOMY	NO	NO	NO	NO	NO	NO
20	ILEAL PERFORATION	EXPLORATORY LAPAROTOMY	EXPLORATORY LAPAROTOMY WITH RIGHT HEMICOLECTOMY WITH END ILEOSTMY	YES	NO	NO	NO	NO	NO
21	COLONIC PERFORATION	EXPLORATORY LAPAROTOMY	EXPLORATORY LAPAROTOMY WITH PRIMARY REPAIR OF PERFORATIONWITH PROXIMAL LOOP ILEOSTOMY	NO	NO	NO	NO	NO	NO
22	ILEAL PERFORATION	EXPLORATORY LAPAROTOMY	EXPLORATORY LAPAROTOMY WITH PRIMARY REPAIR OF ILEAL PERFORATIONWITH LOOP ILEOSTOMY WITH WITH PL,PD	YES	NO	NO	NO	NO	NO
23	JEJUNAL PERFORATION	EXPLORATORY LAPAROTOMY	EXPLORATORY LAPAROTOMY WITH JEJUNO JEJUNAL RESECTION WITH END TO END ANASTOMOSIS WITH FEEDING JEJUNOSTOMY	YES	NO	NO	NO	YES	NO
24	APPENDICULAR PERFORATIION	DIAGNOSTIC LAP AND PROCEED	DIAGNOSTIC LAP CONVERTED TO EXPLORATORY LAPAROTOMY WITH APPENDECTOMY	NO	NO	NO	NO	NO	NO

SR NO.	MORBIDITY G. MECHANICAL VENTILATION	MORBIDITY H. GCS<8	MORBIDITY I ICU STAY	MORBIDITY I ICU STAY (DAYS)	MORBIDITY J. HOSPITAL STAY (DAYS)	OUTCOME
1	NO	NO	N		9	DISCHARGE
2	NO	NO	Y	9	11	DISCHARGE
3	NO	NO	N		15	DISCHARGE
4	NO	NO	Y	10	11	DISCHARGE
5	NO	NO	Y	8	11	DEATH
6	NO	NO	Y	14	18	DISCHARGE
7	YES	NO	Y	7	10	DISCHARGE
8	YES	NO	Y	12	14	DISCHARGE
9	NO	NO	N		9	DISCHARGE
10	YES	NO	Y	8	14	DISCHARGE
11	YES	NO	Y	18	21	DISCHARGE
12	YES	YES	Y	5	5	DEATH
13	YES	YES	Y	4	4	DEATH
14	YES	YES	Y	1	1	DEATH
15	YES	YES	Y	6	7	DEATH
16	YES	NO	Y	4	6	DISCHARGE
17	YES	NO	Y	8	10	DISCHARGE
18	YES	NO	Y	14	19	DISCHARGE
19	NO	NO	N		8	DISCHARGE
20	NO	NO	N		28	DISCHARGE
21	NO	NO	Y	8	10	DISCHARGE
22	NO	NO	N		16	DISCHARGE
23	YES	YES	Y	2	2	DEATH
24	NO	NO	N		6	DISCHARGE

SR NO.	NAME	AGE	SEX	MRD NO.	SYM. PAIN ABDOMEN	SYM. VOMITING	SYM. ABD DISTENSION	SYM. CONSTIPATION	SYM. FEVER	P/A GUARDING	P/A TENDERNESS	P/A RIGIDITY	TEMP IN DEGREE FARENHEIT	HEART RATE BEATS/MIN	RESP. RATE / MIN	SBP	DBP	SPO2 %	HB. GM/DL	TLC
25	PS	33	M	1512918	YES	NO	NO	NO	NO	YES	YES	YES	99	110	20	90	60	94	11.4	8300
26	SK	24	F	1712972	YES	YES	NO	NO	YES	YES	YES	YES	99	123	24	100	60	100	8.5	16200
27	BK	60	F	1704507	NO	NO	YES	NO	NO	YES	YES	YES	98	136	22	130	70	85	6.7	16000
28	M	21	F	1710142	YES	NO	YES	NO	NO	YES	YES	YES	99	156	24			98	10.3	20300
29	KG	60	F	899281	YES	YES	NO	NO	NO	YES	YES	YES	98	98	18	110	80	96	11.4	13100
30	CD	66	M	1490488	YES	NO	NO	YES	NO	YES	YES	YES	98	110	24	80	60	97	14	9800
31	TS	18	M	1491075	YES	NO	YES	NO	NO	YES	YES	NO	98	110	22	120	70	99	9.7	21100
32	SS	69	M	1584857	YES	NO	NO	YES	YES	YES	YES	YES	100	80	24	100	60	90	8.3	19400
33	RK	50	M	1515006	YES	YES	NO	NO	NO	NO	YES	NO	99	120	20	120	70	98	8.1	14000
34	H	45	M	1596379	YES	NO	NO	NO	YES	YES	YES	YES	97	120	22	100	60	96	10.5	8200
35	KS	45	M	1473279	YES	YES	YES	NO	YES	NO	YES	NO	97	112	20	140	90	97	14	9100
36	MS	90	M	1445898	YES	YES	NO	YES	NO	YES	YES	YES	97	99	24	100	80	96	10.8	12000
37	AT	31	M	1595572	YES	NO	NO	NO	NO	NO	YES	YES	98	98	22	140	80	98	10.4	12600
38	TH	34	M	1601011	YES	NO	NO	YES	NO	YES	YES	YES	98	137	26	70	40	98	9.7	2600
39	RS	46	M	1510509	YES	NO	NO	NO	NO	YES	YES	YES	98	148	24	80	60	91	9.8	24000
40	KC	65	M	1605032	YES	YES	NO	NO	YES	YES	YES	YES	100	118	22	120	70	94	11.5	13700
41	ZS	76	M	1626388	YES	NO	YES	YES	NO	YES	YES	YES	99	92	22	110	70	100	10.6	1700
42	AK	23	F	1632698	YES	NO	YES	YES	YES	YES	YES	YES	97	122	24	90	60	100	7.8	1500
43	SK	42	F	1566042	YES	NO	YES	NO	NO	YES	YES	YES	99	96	22	100	60	98	11.8	13000
44	RL	62	M	1587140	YES	NO	NO	NO	NO	YES	YES	YES	98	106	22	110	70	98	7	3400
45	MK	48	F	1550080	NO	NO	YES	NO	NO	YES	YES	YES	97	110	24	80	50	92	7	7120
46	VT	69	F	1554267	YES	NO	NO	YES	NO	YES	YES	YES	98.6	120	24	130	70	96	7.7	2900
47	JK	53	F	1548657	YES	NO	NO	NO	NO	YES	YES	YES	98	78	22	110	80	98	11.2	10600
48	NK	65	F	1552250	YES	NO	NO	YES	NO	YES	YES	YES	99	86	22	100	60	94	11.3	18000
49	PS	72	M	108019	YES	YES	NO	NO	NO	YES	YES	YES	98	98	18	90	70	89	7.4	23500
50	AS	20	M	1428616	YES	NO	YES	NO	NO	YES	YES	YES	97	114	22	100	70	100	14	1480

SR NO.	PTI	INR	RBS. MG/DL	S SODIUM. MMOL/L	S. POTASSIUM MMOL/L	S. CHLORIDE MMOL/L	BLOOD UREA. MG/DL	S. CREATININE MG/DL	PAO2. MMHG	PACO2. MMHG	XRAY ERECT	XRAY SUPINE	USG W/A
25	12.8	1.17	101	133	3.79	100	19	0.48	82	34	DILATED GUT LOOPS		
26	87.6	7.86	37	144	2.76	107	11	0.28	88	30	PNEUMOPERITONEUM WITH DILATED GUT LOOPS		
27	13.6	1.24	181	135	3.95	105	8	0.43	74	41			
28	22.2	2.02	105	131	5.31	100	36	0.42	85	36			
29	14.6	1.34	168	140	5.26	108	31	0.97	109	34	PNEUMOPERITONEUM		
30	14.9	1.38	129	136	5.98	108	71	2.06	139	57	PNEUMOPERITONEUM		
31	15.6	1.43	136	135	3.69	102	13	0.43	46	41	PNEUMOPERITONEUM		
32	11.6	1.06	108	133	5.36	107	111	1.92	88	28	PNEUMOPERITONEUM		
33	20.4	1.86	202	142	3.76	114	42	1.02	70	28	PNEUMOPERITONEUM		
34	12.7	1.16	133	133	4.21	103	67	1.48	69	34	PNEUMOPERITONEUM		MILD ASCITES WITH MILD B/LPLEURAL EFFUSION
35	16.7	1.53	105	135	3.76	108	38	1.06	109	52	PNEUMOPERITONEUM		
36	18.8	1.72	64	122	3.56	93	145	1.53	74	30	PNEUMOPERITONEUM		
37	12.7	1.16	129	136	3.36	102	20	0.74	78	39	PNEUMOPERITONEUM		
38	13.8	1.2	90	139	5.01	110	66	1.2	84	38	PNEUMOPERITONEUM		
39	11.2	1.03	83	144	4.02	106	59	1.46	51	72	PNEUMOPERITONEUM		
40	22	2	98	134	4.45	99	32	0.42	159	45	DILATED GUT LOOPS SEEN IN		
41	14.2	1.2	81	141	3.55	109	107	1.12	79	35	PNEUMOPERITONEUM		
42	13.8	1.2	88	125	2.93	96	34	0.42	90	35	PNEUMOPERITONEUM		
43	11.1	1.02	123	137	3.76	103	35	0.66	67	40	PNEUMOPERITONEUM		
44	14.3	1.31	89	143	2.71	107	33	0.92	60	32	DILATED GUT LOOPS		MILD FREE FLUID SEEN IN PERITONEAL CAVITY
45	18	1.45	186	135	4.5	109	57	0.8	68	32	MASSIVE PNEUMOPERITONEUM		
46	11.7	1.07	169	144	3.11	110	47	0.71	92	52	MASSIVE PNEUMOPERITONEUM		
47	14.2	1.3	110	132	4.32	95	31	1.41	77	35			
48	13.7	1.25	108	150	3.13	112	71	0.62	65	27	PNEUMOPERITONEUM		
49	14.7	1.34	138	139	3.27	105	196	4.15	117	31	DILATED GUT LOOPS		
50	12.7	1.16	113	136	3.65	102	35	0.45	77	29	PNEUMOPERITONEUM		

SR NO.	CECT W/A	MPI AGE >50 YEARS	MPI FEMALE GENDER	MPI ORGAN FAILURE	MPI MALIGNANCY	MPI PERITONITIS >24 HOURS	MPI ORIGIN OF SEPSIS NOT COLONIC	MPI DIFFUSED GENERALIZED PERITONITIS	MPI FLUID ANALYSIS CLEAR	MPI FLUID ANALYSIS CLOUDY/PURULENT	MPI FLUID ANALYSIS FAECAL	MPI SCORE	MPI CATEGORY. A/B/C
25	EVIDENCE OF AIR CONTAINING COLLECTION IN PELVIS WITH UPSTREAM DILATATION OF SMALL BOWEL LOOPS SECONDARY TO HOLLOW VISCUS PERFORATION	NO	NO	NO	NO	YES	YES	YES	NO	PURULENT		20	A
26		NO	YES	YES	NO	YES	YES	YES	NO	PURULENT		32	C
27	MASSIVE PNEUMOPERITONEUM	YES	YES	NO	NO	YES	YES	YES	NO		FAECAL	36	C
28	THICKENED BOWEL LOOPS WITH PNEUMOPERITONEUM LIKELY ILEAL PERFORATION	NO	NO	YES	NO	YES	YES	YES	NO	PURULENT		27	B
29	COLONIC DIVERTICULITIS AND PERFORATION INVOLVING RIGHT SIDED COLON WITH PNEUMOPERITOENUM	YES	YES	NO	NO	NO	YES	NO	NO	CLOUDY		20	B
30	DUODENAL PERFORATION WITH ACTIVE LEAK OF CONTRAST FROM D1 OF DUODENUM	YES	NO	NO	NO	YES	YES	YES	NO	PURULENT		25	B
31	ULCERATIVE COLITIS WITH ACTIVE PROCTITIS WITH DOISTAL ILELA PERFORATION WITH MODERATE ASCITES AND PNEUMOPERITONEUM	NO	NO	NO	NO	YES	YES	YES	NO	PURULENT		20	A
32		YES	NO	NO	NO	YES	YES	YES	NO	PURULENT		25	B
33		NO	NO	NO	NO	YES	YES	NO	NO	PURULENT		14	A
34		NO	NO	NO	NO	YES	YES	NO	NO	PURULENT		14	A
35		NO	NO	YES	NO	YES	YES	NO	NO	PURULENT		21	B
36		YES	NO	NO	NO	YES	YES	NO	NO	PURULENT		19	A
37	SUGGESTIVE OF PERFORATION INVOLVING PROXIMAL PAT OF DUODENUM WITH PNEUMOPERITONEUM AND ASCITES	NO	NO	NO	NO	NO	YES	NO	NO	PURULENT		10	A
38		NO	NO	NO	NO	YES	YES	NO	NO	PURULENT		14	A
39		NO	NO	YES	NO	NO	YES	NO	NO	PURULENT		16	A
40	AIR CONTAINING ILL DEFINED COLLECTION IN RETROPERITONEUM LIKELY PARADUODENAL COLLECTION	YES	NO	NO	NO	YES	YES	YES	NO	PURULENT		25	B
41		YES	NO	NO	NO	YES	YES	YES	NO	PURULENT		25	B
42	MODERATE AMOUNT OF FREE FLUID WITH PNEUMOPERITONEUM	NO	YES	YES	NO	YES	YES	YES	NO	PURULENT		32	C
43		NO	YES	NO	NO	YES	YES	YES	NO	PURULENT		25	B
44	MODERATE ASCITES WITH PNEUMOPERITONEUM WITH THICKENING OF TERMINAL ILEAL LOOPS	YES	NO	NO	NO	YES	YES	YES	NO		FAECAL	31	C
45	MILD TO MODERATE FLUID SEEN IN PERITONEAL CAVITY WITH MODERATE AMOUNT OF FREE AIR IN PERITONEAL CAVITY SUGGESTIVE OF INTESTINAL PERFORATION	NO	YES	NO	NO	YES	YES	YES	NO	CLOUDY		25	B
46		YES	YES	YES	NO	YES	YES	YES	NO	PURULENT		33	C
47	SUGGESTIVE OF GALL BLADDER PERFORATION WITH PNEUMOPERITONEUM	YES	YES	NO	NO	YES	YES	NO	NO	PURULENT		30	C
48		YES	YES	NO	NO	YES	YES	YES	NO	PURULENT		26	B
49	LARGE AIR CONTAINING COLLECTION IN RIGHT PARACOLIC GUTTER WITH PNEUMOPERITONEUM	YES	NO	YES	NO	YES	YES	YES	NO		FAECAL	38	C
50		NO	NO	NO	NO	NO	YES	NO	NO	PURULENT		20	A

SR NO.	SITE OF PERFORATION	SURGICAL PROCEDURE PROPOSED	SURGICAL PROCEDURE EXECUTED	MORBIDITY A. WOUND INFECTION	MORBIDITY B. WOUND DEHISCENCE	MORBIDITY C. REOPERATION	MORBIDITY D. INTRAABDOMINAL COLLECTION	MORBIDITY E. ANASTOMOTIC LEAK	MORBIDITY F. DIALYSIS
25	ILEAL PERFORATION	EXPLORATORY LAPAROTOMY	EXPLORATORY LAPAROTOMY WITH RESECTION OF TERMINAL ILEUM WITH END ILEOSTOMY	NO	NO	NO	NO	NO	NO
26	ILEAL PERFORATION	EXPLORATORY LAPAROTOMY	EXPLORATORY LAPAROTOMY WITH ADHESIOLYSIS WITH LOOP ILEOSTOMY	YES	NO	NO	YES	NO	NO
27	CECAL PERFORATION	EXPLORATORY LAPAROTOMY	EXPLORATORY LAPAROTOMY WITH PRIMARY REPAIR OF PERFORATION WITH LOOP ILEOSTOMY	YES	YES	NO	YES	NO	NO
28	ILEAL PERFORATION	EXPLORATORY LAPAROTOMY	EXPLORATORY LAPAROTOMY WITH PRIMARY REPAIR OF ILEAL PERFORATIONWITH LOOP ILEOSTOMY	YES	NO	NO	NO	NO	NO
29	GASTRIC PERFORATION	EXPLORATORY LAPAROTOMY	EXPLORATORY LAPAROTOMY WITH MODIFIED GRAHAMS PATCH REPAIR WITH PERITONEAL DRAINAGE WITH PERITONEAL LAVAGE	NO	NO	NO	NO	NO	NO
30	DUODENAL PERFORATION	EXPLORATORY LAPAROTOMY	EXPLORATORY LAPAROTOMY WITH MODIFIED GRAHAMS PATCH REPAIR WITH FEEDING JEJUNOSTOMY WITH PERITONEAL DRAINAGE WITH PERITONEAL LAVAGE	YES	NO	NO	NO	NO	NO
31	ILEAL PERFORATION	EXPLORATORY LAPAROTOMY	EXPLORATORY LAPAROTOMY WITH LOOP ILESTOMY	YES	NO	NO	NO	NO	NO
32	ILEAL PERFORATION	EXPLORATORY LAPAROTOMY	EXPLORATORY LAPAROTOMY WITH ILEAL RESECTION AND END TO END ANASTOMOSIS WITH PROXIMAL LOOP ILEOSTOMY	YES	NO	NO	NO	YES	NO
33	DUODENAL PERFORATION	EXPLORATORY LAPAROTOMY	EXPLORATORY LAPAROTOMY WITH MODIFIED GRAHAMS PATCH REPAIR WITH FEEDING JEJUNOSTOMY WITH PERITONEAL DRAINAGE WITH PERITONEAL LAVAGE	YES	NO	NO	NO	NO	NO
34	DUODENAL PERFORATION	EXPLORATORY LAPAROTOMY	EXPLORATORY LAPAROTOMY WITH DUODENAL PERFORATIONREPAIR	NO	NO	NO	YES	NO	NO
35	DUODENAL PERFORATION	EXPLORATORY LAPAROTOMY	EXPLORATORY LAPAROTOMY WITH CELAN JONES REPAIR OF DUODENAL PERFORATION	NO	NO	NO	NO	NO	NO
36	DUODENAL PERFORATION	EXPLORATORY LAPAROTOMY	EXPLORATORY LAPAROTOMY WITH CELAN JONES REPAIR OF DUODENAL PERFORATION	NO	NO	NO	NO	NO	NO
37	DUODENAL PERFORATION	EXPLORATORY LAPAROTOMY	EXPLORATORY LAPAROTOMY WITH MODIFIED GRAHAMS PATCH REPAIR WITH PERITONEAL DRAINAGE WITH PERITONEAL LAVAGE	NO	NO	NO	NO	NO	NO
38	GASTRIC PERFORATION	EXPLORATORY LAPAROTOMY	EXPLORATORY LAPAROTOMY WITH MODIFIED GRAHAMS PATCH REPAIR WITH PERITONEAL DRAINAGE WITH PERITONEAL LAVAGE	YES	NO	NO	NO	NO	NO
39	DUODENAL PERFORATION	EXPLORATORY LAPAROTOMY	EXPLORATORY LAPAROTOMY WITH MODIFIED GRAHAMS PATCH REPAIR WITH PERITONEAL DRAINAGE WITH PERITONEAL LAVAGE	NO	NO	NO	NO	NO	NO
40	DUODENAL PERFORATION	EXPLORATORY LAPAROTOMY	EXPLORATORY LAPAROTOMY WITH MODIFIED GRAHAMS PATCH REPAIR WITH PERITONEAL DRAINAGE WITH PERITONEAL LAVAGE	YES	NO	NO	NO	NO	NO
41	JEJUNAL PERFORATION	EXPLORATORY LAPAROTOMY	EXPLORATORY LAPAROTOMY WITH RESECTION AND END TO END ANASTOMOSIS	YES	NO	NO	NO	NO	NO
42	ILEAL PERFORATION	EXPLORATORY LAPAROTOMY	EXPLORATORY LAPAROTOMY WITH RESECTION AND END TO END ANASTOMOSIS WITH PROXIMAL LOOP ILEOSTOMY	YES	NO	NO	NO	NO	NO
43	GASTRIC PERFORATION	EXPLORATORY LAPAROTOMY	EXPLORATORY LAPAROTOMY WITH MODIFIED GRAHAMS PATCH REPAIR WITH FEEDING JEJUNOSTOMY WITH PERITONEAL DRAINAGE WITH PERITONEAL LAVAGE	NO	NO	NO	NO	NO	NO
44	ILEAL PERFORATION	EXPLORATORY LAPAROTOMY	EXPLORATORY LAPAROTOMY WITH RESECTION OF TERMINAL ILEUM WITH END ILEOSTOMY	YES	NO	NO	NO	NO	NO
45	DUODENAL PERFORATION	EXPLORATORY LAPAROTOMY	EXPLORATORY LAPAROTOMY WITH RESECTION OF SMALL INTESTINE TUMOR WITH REPAIR OF DUODENAL PERFORATIONWITH ROUX EN Y GASTROJEJUNOSTOMY	NO	NO	NO	NO	NO	NO
46	COLONIC PERFORATION	EXPLORATORY LAPAROTOMY	EXPLORATORY LAPAROTOMY WITH DIVERSION COLOSTOMY	YES	NO	NO	YES	NO	NO
47	GALL BLADDER PERFORATION	DIAGNOSTIC LAP AND PROCEED	DIAGNOSTIC LAP CONVERTED TO EXPLORATORY LAPAROTOMY WITH CHOLECYSTECTOMY WITH LOOP ILEOSTOMY	YES	NO	NO	NO	NO	NO
48	ILEAL PERFORATION	EXPLORATORY LAPAROTOMY	EXPLORATORY LAPAROTOMY WITH PRIMARY REPAIR OF ILEAL PERFORATION	YES	YES	NO	NO	NO	NO
49	ILEAL PERFORATION	EXPLORATORY LAPAROTOMY	EXPLORATORY LAPAROTOMY WITH RESECTION AND END TO END ANASTOMOSIS WITH PROXIMAL LOOP ILEOSTOMY	YES	NO	NO	NO	NO	NO
50	ILEAL PERFORATION	EXPLORATORY LAPAROTOMY	EXPLORATORY LAPAROTOMY WITH RIGHT HEMICOLECTOMY WITH END ILEOSTMY	NO	NO	NO	NO	NO	NO

SR NO.	MORBIDITY G. MECHANICAL VENTILATION	MORBIDITY H. GCS<8	MORBIDITY I ICU STAY	MORBIDITY I ICU STAY (DAYS)	MORBIDITY J. HOSPITAL STAY (DAYS)	OUTCOME
25	NO	NO	N		14	DISCHARGE
26	YES	NO	Y	7	11	DISCHARGE
27	YES	NO	Y	8	15	DISCHARGE
28	NO	NO	Y	7	14	DISCHARGE
29	NO	NO	Y	8	11	DISCHARGE
30	YES	NO	Y	5	20	DISCHARGE
31	YES	NO	Y	5	13	DISCHARGE
32	YES	NO	Y	9	14	DISCHARGE
33	NO	NO	N		12	DISCHARGE
34	NO	NO	N		16	DISCHARGE
35	YES	NO	Y	5	9	DISCHARGE
36	NO	NO	Y	2	11	DISCHARGE
37	NO	NO	N		8	DISCHARGE
38	NO	NO	Y	3	12	DISCHARGE
39	NO	NO	Y	2	18	DISCHARGE
40	YES	NO	Y	11	23	DISCHARGE
41	NO	NO	N		8	DISCHARGE
42	NO	NO	Y	18	18	DEATH
43	NO	NO	N		12	DISCHARGE
44	NO	NO	N		16	DISCHARGE
45	NO	NO	Y	9	15	DISCHARGE
46	YES	NO	Y	5	8	DEATH
47	NO	NO	N		9	DISCHARGE
48	YES	NO	Y	9	11	DISCHARGE
49	YES	YES	Y	15	15	DEATH
50	NO	NO	N		10	DISCHARGE

SR NO.	NAME	AGE	SEX	MRD NO.	SYM. PAIN ABDOMEN	SYM. VOMITING	SYM. ABD DISTENSION	SYM. CONSTIPATION	SYM. FEVER	P/A GUARDING	P/A TENDERNESS	P/A RIGIDITY	TEMP IN DEGREE FARENHEIT	HEART RATE BEATS/MIN	RESP. RATE / MIN	SBP	DBP	SPO2 %	HB. GM/DL	TLC
51	GS	35	M	1512623	YES	NO	YES	YES	NO	YES	YES	YES	98	72	20	140	80	98	9.5	5500
52	MS	53	M	1034137	YES	NO	NO	NO	YES	YES	YES	YES	100	110	22	110	70	98	7	22850
53	A	19	M	1510511	YES	NO	NO	NO	NO	YES	YES	YES	98	120	24	100	60	97	11.7	18000
54	DS	34	M	1504054	YES	NO	NO	NO	NO	YES	YES	YES	99	78	24	120	80	97	7	21900
55	SK	40	M	1453396	YES	NO	NO	NO	YES	YES	YES	YES	98.6	116	24	90	60	94	5.7	24700
56	BC	71	M	1504032	YES	NO	YES	NO	YES	YES	YES	YES	99	70	24	140	80	98	13.3	4700
57	KS	45	M	1473279	YES	NO	YES	NO	YES	YES	YES	YES	98	112	22	140	90	97	15.6	13200
58	ZB	47	F	1461740	YES	NO	NO	YES	YES	YES	YES	YES	100	129	26			98	12.3	22900
59	GS	77	M	1453288	YES	NO	YES	NO	YES	YES	YES	YES	101	88	24	130	70	96	5.1	35400
60	KS	58	M	1456624	YES	NO	NO	NO	NO	YES	YES	YES	99	96	24	80	60	98	9.5	12460
61	BC	35	F	1435469	YES	YES	NO	NO	NO	YES	YES	YES	99	130	22	130	90	99	10.7	12000
62	CK	58	M	1415233	YES	NO	NO	YES	NO	YES	YES	YES	98	106	24	120	80	98	12.1	3950
63	RB	38	F	1011077	YES	NO	NO	YES	NO	YES	YES	YES	97	116	24	110	60	93	110.7	12400
64	KS	55	M	1584317	YES	NO	NO	NO	YES	YES	YES	YES	98	124	26	100	60	97	14.2	24500
65	SS	20	F	1522637	YES	NO	NO	YES	YES	YES	YES	YES	98	120	22	100	60	98	7.8	20300
66	SG	62	F	1572986	YES	NO	NO	NO	10	YES	YES	YES	98.6	94	24	140	80	100	10.1	13200
67	MK	41	M	1557322	YES	YES	NO	YES	NO	YES	YES	YES	99.7	106	20	120	80	95	11.5	16900
68	S	23	F	1551414	YES	YES	NO	YES	NO	YES	YES	YES	98.2	102	22	120	80	98	10.2	21900
69	MK	32	M	1548883	YES	NO	NO	NO	NO	YES	YES	YES	99	88	22	110	70	98	13.7	19820
70	BK	76	F	1542421	YES	NO	NO	YES	NO	YES	YES	YES	98.6	118	22	130	80	95	8.2	16700
71	TL	61	M	1549320	YES	NO	NO	YES	15	YES	YES	YES	97.4	96	20	120	80	97	9.8	7500
72	RA	78	F	863797	YES	NO	NO	NO	YES	YES	YES	YES	98	102	22	90	60	98	8.2	17520
73	JS	37	M	1534455	YES	NO	NO	NO	NO	YES	YES	YES	99	90	22	90	60	96	8.9	3680
74	RS	70	M	1530297	YES	YES	NO	NO	NO	YES	YES	YES	98.4	108	20			100	8.2	21500
75	PJ	19	M	1542228	YES	YES	NO	YES	NO	YES	YES	YES	98	118	22	120	80	96	12.4	12200
76	RK	67	F	1601115	YES	YES	NO	NO	NO	YES	YES	YES	100.2	84	22	120	70	99	9.1	15000
77	H	45	M	1596379	YES	YES	NO	NO	YES	YES	YES	YES	97.2	120	22	100	60	96	10.5	21000

SR NO.	PTI	INR	RBS. MG/DL	S SODIUM. MMOL/L	S. POTASSIUM MMOL/L	S. CHLORIDE MMOL/L	BLOOD UREA. MG/DL	S. CREATININE MG/DL	PAO2. MMHG	PACO2. MMHG	XRAY ERECT	XRAY SUPINE	USG W/A
51	33.4	3.03	77	130	4.07	110	24	0.38	108	34	PNEUMOPERITONEUM		MODERATE FREE FLUID SEEN IN PERITONEAL CAVITY
52	54.5	4.92	108	128	6.29	87	308	2.43	68	22	PNEUMOPERITONEUM		MODERATE FREE FLUID SEEN IN PERITONEAL CAVITY WITH ECHOGENIC CONTENTS
53	16.2	1.48	69	139	3.96	102	29	0.79	68	34	PNEUMOPERITONEUM	DILATED GUT LOOPS	
54	18.7	1.7	72	150	5.66	99	106	1.73	265	39	PNEUMOPERITONEUM		
55	33.8	3.07	34	132	2.55	94	126	0.97	134	40	PNEUMOPERITONEUM		
56	13	1.19	75	141	4.2	105	58	0.68	58	35	PNEUMOPERITONEUM		
57	16.7	1.53	81	135	4.06	102	33	0.82	109	52	PNEUMOPERITONEUM		
58	16.2	1.48	79	150	96	2.27	31	0.66	60	28	PNEUMOPERITONEUM		
59	23.1	2.09	96	154	3.55	109	115	1.48	77	23	MULTIPLE AIR FLUID LEVELS	DILATED GUT LOOPS	SMALL LOCULATED COLLECTION IN RIGHT ILIAC FOSSA
60	14	1.28	73	139	3.3	98	36	0.81	134	32		DILATED GUT LOOPS	
61	16.3	1.49	98	134	5.19	95	23	0.53	80	34	PNEUMOPERITONEUM		
62	22.5	2.05	220	133	4.43	95	50	1.26	105	34	PNEUMOPERITONEUM		
63	13.9	1.27	103	138	3.74	102	32	0.77	84	28	PNEUMOPERITONEUM		
64	13.1	1.2	54	133	2.8	90	46	0.92	64	27			
65	15.8	1.44	140	140	2.8	113	15	0.4	97	32		DILATED GUT LOOPS	MILD ASCITES
66	16.6	1.52	78	135	3.51	90	16	0.45	82	32			
67	15.8	1.44	98	136	3.6	108	10	0.45	76	24			
68	13.7	1.25	68	136	4.42	100	13	0.51	80	35		DILATED GUT LOOPS	
69	12.4	1.14	98	136	4.37	99	11	0.92	79	35	PNEUMOPERITONEUM		MILD ASCITES
70	14.2	1.35	150	143	2.87	108	124	2.96	93	34			
71	13.8	1.23	157	125	92	5.11	30	0.69	71	27	PNEUMOPERITONEUM		
72	13.2	1.21	109	138	3.55	94	57	0.62	123	40	GASEOUS ABDOMEN		
73	18.4	1.68	76	141	5.04	106	20	0.33	150	41	PNEUMOPERITONEUM		
74	15.8	1.6	305	144	4.91	109	110	1.77	63	27	PNEUMOPERITONEUM WITH MULTIPLE AIR FLUID LEVELS		MINIMAL ASCITES
75	17.1	1.56	96	134	3.53	94	16	0.43	77	34	AIR FLUID LEVELS		
76	12.8	1.17	84	140	3.59	107	9	0.65	69	25	PNEUMOPERITONEUM		
77	12.7	1.1	98	136	5.38	102	67	1.48	80	32	MULTIPLE AIR FLUID LEVELS		MILD ASCITES WITH MILD B/LPLEURAL EFFUSION

SR NO.	CECT W/A	MPI AGE >50 YEARS	MPI FEMALE GENDER	MPI ORGAN FAILURE	MPI MALIGNANCY	MPI PERITONITIS >24 HOURS	MPI ORIGIN OF SEPSIS NOT COLONIC	MPI DIFFUSED GENERALIZED PERITONITIS	MPI FLUID ANALYSIS CLEAR	MPI FLUID ANALYSIS CLOUDY/PURULENT	MPI FLUID ANALYSIS FAECAL	MPI SCORE	MPI CATEGORY. A/B/C
51		NO	NO	NO	NO	YES	YES	YES	NO	PURULENT		20	A
52		YES	NO	YES	NO	YES	YES	YES	NO		FAECAL	38	C
53		NO	NO	NO	NO	YES	YES	NO	NO	PURULENT		14	A
54		NO	NO	YES	NO	YES	YES	NO	NO	PURULENT		21	B
55		NO	NO	YES	NO	YES	YES	YES	NO		FAECAL	32	C
56		YES	NO	NO	NO	YES	NO	YES	NO		FAECAL	27	B
57		NO	NO	YES	NO	YES	YES	NO	NO	PURULENT		21	B
58		NO	YES	YES	NO	YES	NO	YES	NO		FAECAL	34	C
59	JEJUNAL AND ILEAL LOOPS ARE SEEN DISTENDED WITH ZONE OF TRANSITION IN RIGHT ILIAC FOSSA AND CIRCUMFERENTIAL WALL THICKENING INVOLVING ILEAL LOOPS AND WALL OF. ILEUM NOCLEARLY VISULAIZED	YES	NO	NO	NO	YES	YES	YES	NO		FAECAL	31	C
60		YES	NO	NO	NO	YES	NO	YES	NO	PURULENT		21	B
61		NO	YES	NO	NO	YES	NO	YES	NO		FAECAL	27	B
62	JEJUNAL AND ILEAL LOOPS ARE DILATED WITH SIGNIFICANT PNEUMOPERITONEUM AND FLUID IN PERITONEAL CAVITY WITH SMALL BOWEL OBSTRUCTION	YES	NO	YES	NO	YES	YES	YES	NO	PURULENT		32	C
63		NO	YES	NO	NO	NO	YES	YES	NO	PURULENT		21	B
64	GRADUAL CHANGE IN CALIBRE IN PROXIMAL ILEUM WITH EVIDENCE OF SHORT NON ENHANCING SEGMENT IN DISTAL ILEAL REGION	YES	NO	NO	NO	YES	YES	YES	NO	PURULENT		25	B
65	SIGNIFICANT ASCITES CAVITY WITH PNEUMOPERITONEUM WITH INTRA ABDOMINAL COLLECTION	NO	YES	NO	NO	YES	YES	YES	NO	PURULENT		25	B
66	FEATURES SUGGESTIVE OF ILEAL PERFORATION WITH LOCULATED COLLECTIONS AND SIGNIFICANT INFLAMMATORY CHANGES , ASCITES AND PNEUMOPERITONEUM	YES	YES	NO	NO	YES	NO	YES	NO		FAECAL	32	C
67	SUGGESTIVE OF SIGMOID AND DISTAL DESCENDING COLOM DIVERTICULOSIS WITH SIGMOID DIVERTICULITIS WITH PERFORATION	NO	NO	NO	NO	YES	NO	YES	NO	PURULENT		16	A
68		NO	YES	NO	NO	YES	YES	YES	NO	PURULENT		20	A
69	CHRONIC INFLAMMATORY BOWEL DISEASE INVOLVING TERMINAL ILEUM AND LARGE GUT WITH ACUTE EXACERBATION LEADING TO PERFORATION	NO	NO	NO	NO	YES	YES	YES	NO	PURULENT		20	A
70	PNEUMOPERITONEUM	YES	YES	YES	NO	YES	YES	YES	NO		FAECAL	42	C
71		YES	NO	NO	NO	YES	YES	YES	NO	PURULENT		25	B
72	SUGGESTIVE OF HOLLOW VISCUS PERFORATION	YES	YES	NO	NO	YES	NO	YES	NO		FAECAL	32	C
73		NO	NO	NO	NO	YES	NO	YES	NO		FAECAL	22	B
74		YES	NO	YES	NO	YES	YES	YES	NO	PURULENT		32	C
75	HIGH GRADE DISTAL SMALL BOWEL OBSTRUCTION WITH PERFORATION	NO	NO	NO	NO	YES	YES	YES	NO	PURULENT		20	A
76		YES	YES	NO	NO	YES	YES	YES	NO	PURULENT		30	C
77		NO	NO	NO	NO	YES	YES	NO	NO	PURULENT		14	A

SR NO.	SITE OF PERFORATION	SURGICAL PROCEDURE PROPOSED	SURGICAL PROCEDURE EXECUTED	MORBIDITY A. WOUND INFECTION	MORBIDITY B. WOUND DEHISCENCE	MORBIDITY C. REOPERATION	MORBIDITY D. INTRAABDOMINAL COLLECTION	MORBIDITY E. ANASTOMOTIC LEAK	MORBIDITY F. DIALYSIS
51	ILEAL PERFORATION	EXPLORATORY LAPAROTOMY	EXPLORATORY LAPAROTOMY WITH LOOP ILESTOMY	NO	NO	NO	NO	NO	NO
52	ILEAL PERFORATION	EXPLORATORY LAPAROTOMY	EXPLORATORY LAPAROTOMY WITH LOOP ILESTOMY	YES	NO	NO	NO	NO	YES
53	APPENDICULAR PERFORATIION	DIAGNOSTIC LAP AND PROCEED	EXPLORATORY LAPAROTOMY WITH APPENDECTOMY	NO	NO	NO	YES	NO	NO
54	DUODENAL PERFORATION	EXPLORATORY LAPAROTOMY	EXPLORATORY LAPAROTOMY WITH CELAN JONES REPAIR OF DUODENAL PERFORATION	NO	NO	NO	NO	NO	NO
55	ILEAL PERFORATION	EXPLORATORY LAPAROTOMY	EXPLORATORY LAPAROTOMY WITH PRIMARY REPAIR OF ILEAL PERFORATIONWITH LOOP ILEOSTOMY WITH PERITONEAL LAVAGE WITH PERITONEAL DRAINAGE	NO	NO	NO	NO	NO	NO
56	SIMOID COLON PERFORATION	EXPLORATORY LAPAROTOMY	EXPLORATORY LAPAROTOMY WITH SIGMOID PERFORATION REPAIR	NO	NO	NO	NO	NO	NO
57	DUODENAL PERFORATION	EXPLORATORY LAPAROTOMY	EXPLORATORY LAPAROTOMY WITH CELAN JONES REPAIR OF DUODENAL PERFORATION	NO	NO	NO	NO	NO	NO
58	SIMOID COLON PERFORATION	EXPLORATORY LAPAROTOMY	EXPLORATORY LAPAROTOMY WITH SUBTOTAL COLECTOMY WITH END ILEOSTOMY	YES	NO	NO	NO	NO	NO
59	ILEAL PERFORATION	EXPLORATORY LAPAROTOMY	EXPLORATORY LAPAROTOMY WITH RESECTION OF TERMINAL ILEUM WITH END ILEOSTOMY	YES	NO	NO	NO	NO	NO
60	COLONIC PERFORATION	EXPLORATORY LAPAROTOMY	EXPLORATORY LAPAROTOMY WITH COLLECTION DRAINAGE WITH LOOP ILEOSTOMY	NO	NO	NO	NO	NO	NO
61	SIMOID COLON PERFORATION	EXPLORATORY LAPAROTOMY	EXPLORATORY LAPAROTOMY WITH PRIMARY REPAIR OF SIGMOID PERFORATION WITH PROXIMAL LOOP ILEOSTOMY	YES	NO	NO	NO	NO	NO
62	JEJUNAL PERFORATION	EXPLORATORY LAPAROTOMY	EXPLORATORY LAPAROTOMY WITH PRIMARY REPAIR OF JEJUNAL PERFORATION WITH PERITONEAL DRAINAGE WITH PERITONEAL LAVAGE	YES	NO	NO	NO	NO	NO
63	ILEAL PERFORATION	EXPLORATORY LAPAROTOMY	EXPLORATORY LAPAROTOMY WITH RESECTION AND END TO END ANASTOMOSIS	NO	NO	NO	NO	NO	NO
64	APPENDICULAR PERFORATIION	EXPLORATORY LAPAROTOMY	EXPLORATORY LAPAROTOMY WITH COLLECTION DRAINAGE WITH APPENDECTOMY	NO	NO	NO	NO	NO	NO
65	ILEAL PERFORATION	EXPLORATORY LAPAROTOMY	EXPLORATORY LAPAROTOMY WITH RESECTION AND END TO END ANASTOMOSIS WITH PROXIMAL LOOP ILEOSTOMY	NO	NO	NO	NO	NO	NO
66	SIMOID COLON PERFORATION	EXPLORATORY LAPAROTOMY	EXPLORATORY LAPAROTOMY WITH LOOP ILEOSTOMY	NO	NO	NO	NO	NO	NO
67	SIMOID COLON PERFORATION	DIAGNOSTIC LAP AND PROCEED	DIAGNOSTIC LAP CONVERTED TO EXPLORATORY LAPAROTOMY WITH COLLECTION DRAINAGE WITH ILEOSTOMY	NO	NO	NO	NO	NO	NO
68	ILEAL PERFORATION	DIAGNOSTIC LAP AND PROCEED	DIAGNOSTIC LAP CONVERTED TO EXPLORATORY LAPAROTOMY WITH LOOP ILEOSTOMY	NO	NO	NO	NO	NO	NO
69	ILEAL PERFORATION	EXPLORATORY LAPAROTOMY	EXPLORATORY LAPAROTOMY WITH LOOP ILEOSTOMY	NO	NO	NO	NO	NO	NO
70	ILEAL PERFORATION	EXPLORATORY LAPAROTOMY	EXPLORATORY LAPAROTOMY WITH RESECTION OF TERMINAL ILEUM WITH END ILEOSTOMY	YES	YES	NO	NO	NO	NO
71	ILEAL PERFORATION	EXPLORATORY LAPAROTOMY	EXPLORATORY LAPAROTOMY WITH LOOP ILEOSTOMY	YES	NO	NO	NO	NO	NO
72	SIMOID COLON PERFORATION	EXPLORATORY LAPAROTOMY	EXPLORATORY LAPAROTOMY WITH SIGMOID PERFORATION REPAIR WITH PROXIMAL LOOP ILEOSTOMY	YES	NO	NO	NO	NO	NO
73	COLONIC PERFORATION	EXPLORATORY LAPAROTOMY	EXPLORATORY LAPAROTOMY WITH SUBTOTAL COLECTOMY WITH PROXIMAL LOOP ILEOSTOMY	NO	NO	NO	NO	NO	NO
74	JEJUNAL PERFORATION	EXPLORATORY LAPAROTOMY	EXPLORATORY LAPAROTOMY WITH JEJUNO JEJUNAL RESECTION WITH END TO END ANASTOMOSIS WITH FEEDING JEJUNOSTOMY	YES	NO	NO	NO	NO	NO
75	ILEAL PERFORATION	EXPLORATORY LAPAROTOMY	EXPLORATORY LAPAROTOMY WITH LOOP ILEOSTOMY	YES	NO	NO	NO	NO	NO
76	APPENDICULAR PERFORATIION	EXPLORATORY LAPAROTOMY	EXPLORATORY LAPAROTOMY WITH ILEAL RESECTION AND END TO END ANASTOMOSIS	NO	NO	NO	NO	NO	NO
77	DUODENAL PERFORATION	EXPLORATORY LAPAROTOMY	EXPLORATORY LAPAROTOMY WITH MODIFIED GRAHAMS PATCH REPAIR	NO	NO	NO	YES	NO	NO

SR NO.	MORBIDITY G. MECHANICAL VENTILATION	MORBIDITY H. GCS<8	MORBIDITY I ICU STAY	MORBIDITY I ICU STAY (DAYS)	MORBIDITY J. HOSPITAL STAY (DAYS)	OUTCOME
51	NO	NO	N		9	DISCHARGE
52	YES	YES	Y	14	15	DEATH
53	NO	NO	N		9	DISCHARGE
54	YES	YES	Y	13	13	DISCHARGE
55	YES	YES	Y	7	8	DEATH
56	YES	YES	Y	8	9	DISCHARGE
57	YES	NO	Y	5	9	DISCHARGE
58	YES	YES	Y	8	9	DEATH
59	YES	NO	Y	24	29	DEATH
60	NO	NO	N		11	DISCHARGE
61	NO	NO	N		7	DISCHARGE
62	NO	NO	N		11	DEATH
63	NO	NO	N		9	DISCHARGE
64	NO	NO	N		14	DISCHARGE
65	NO	NO	Y	6	9	DISCHARGE
66	NO	NO	N		22	DISCHARGE
67	NO	NO	N		7	DISCHARGE
68	NO	NO	N		11	DISCHARGE
69	NO	NO	N		12	DISCHARGE
70	YES	NO	Y	18	22	DEATH
71	NO	NO	N		12	DISCHARGE
72	YES	YES	Y	19	19	DEATH
73	YES	NO	Y	14	31	DISCHARGE
74	YES	YES	Y	15	16	DEATH
75	NO	NO	N		16	DISCHARGE
76	NO	NO	N		9	DISCHARGE
77	NO	NO	N		16	DISCHARGE

SR NO.	NAME	AGE	SEX	MRD NO.	SYM. PAIN ABDOMEN	SYM. VOMITING	SYM. ABD DISTENSION	SYM. CONSTIPATION	SYM. FEVER	P/A GUARDING	P/A TENDERNESS	P/A RIGIDITY	TEMP IN DEGREE FARENHEIT	HEART RATE BEATS/MIN	RESP. RATE / MIN	SBP	DBP	SPO2 %	HB. GM/DL	TLC
78	MG	42	M	1597025	YES	YES	NO	NO	YES	YES	YES	YES	101	102	22	110	80	94	10.4	11300
79	NS	50	M	1573119	YES	NO	NO	YES	NO	YES	YES	YES	99	106	22	90	60	99	9.7	20400
80	RS	44	M	1607855	YES	NO	YES	NO	YES	YES	YES	YES	99	94	22	140	80	96	8.9	14000
81	GK	48	F	1629248	YES	NO	NO	NO	YES	YES	YES	YES	98	118	24	110	80	98	7.9	4700
82	S	39	F	1328716	YES	NO	NO	YES	NO	YES	YES	YES	99	148	22			99	10.6	20300
83	MS	32	M	1618911	NO	NO	YES	YES	YES	YES	YES	YES	98	112	22	120	80	98	11.8	17630
84	PA	27	F	1610888	YES	YES	NO	YES	NO	YES	YES	YES	99	124	22	110	60	99	6.7	18700
85	BS	37	M	1545503	YES	NO	NO	NO	YES	NO	YES	NO	99	130	28			88	11	12000
86	JS	49	M	1636450	YES	NO	NO	NO	YES	YES	YES	YES	98	140	28	100	60	96	8.5	16700
87	HS	21	M	1632757	YES	NO	NO	NO	NO	YES	YES	YES	97.6	104	26	120	80	97	8.8	18600
88	MA	70	M	1629238	YES	NO	NO	YES	NO	YES	YES	YES	99	96	20	140	90	96	12	15260
89	GS	40	M	1632109	YES	NO	NO	NO	NO	YES	YES	YES	98	108	20	100	60	94	11.2	13900
90	SKM	45	M	1483525	YES	NO	NO	YES	NO	YES	YES	YES	99.4	94	24	100	70	96	9.7	14400
91	HS	19	M	1603957	YES	NO	NO	YES	YES	YES	YES	YES	99	108	22	140	80	97	13.2	3400
92	S	26	M	1597003	YES	YES	NO	YES	NO	YES	YES	YES	98.2	154	24	110	70	98	9.3	14400
93	SR	78	F	1625688	YES	NO	NO	YES	NO	YES	YES	YES	98	102	22	100	60	97	9.4	16100
94	GS	82	M	1632760	YES	YES	NO	NO	NO	YES	YES	YES	99	86	26	120	80	88	10	19200
95	KK	64	F	1557502	YES	NO	YES	YES	NO	YES	YES	YES	99	60	28			80	11.1	14100
96	RL	64	M	1466866	YES	NO	YES	YES	NO	YES	YES	YES	98	50	20	80	40	97	16.1	5810
97	BS	63	M	1449737	YES	YES	YES	NO	NO	YES	YES	YES	98	90	22	100	60	96	7.6	9000
98	PD	30	F	1603742	YES	NO	NO	NO	YES	YES	YES	YES	99	122	22	110	60	97	10.1	9700
99	NS	69	M	1569743	YES	NO	NO	NO	NO	NO	YES	NO	97	60	24			97	12.6	2000
100	RR	42	F	1638792	YES	YES	NO	NO	NO	YES	YES	YES	100	114	22	120	70	100	12.6	14100

SR NO.	PTI	INR	RBS. MG/DL	S SODIUM. MMOL/L	S. POTASSIUM MMOL/L	S. CHLORIDE MMOL/L	BLOOD UREA. MG/DL	S. CREATININE MG/DL	PAO2. MMHG	PACO2. MMHG	XRAY ERECT	XRAY SUPINE	USG W/A
78	13.6	1.24	95	136	5.03	103	18	0.66	78	32			
79	66.2	5.96	68	139	3.98	112	39	0.36	101	31	PNEUMOPERITONEUM	DILATED GUT LOOPS	
80	14.6	1.34	86	140	4.05	112	80	0.93	74	25	DILATED GUT LOOPS		
81	14.9	1.36	93	139	3.96	105	33	0.51	35	156	PNEUMOPERITONEUM		
82	15.1	1.38	106	136	3.69	102	67	0.18	84	30			
83	14	1.1	89	133	4.31	98	18	0.9	78	22	PNEUMOPERITONEUM	DILATED GUT LOOPS	
84	14	1.3	98	142	3.24	112	13	0.44	67	32			
85	13.7	1.25	126	147	3.58	105	17	0.22	81	34			
86	17.5	1.6	87	153	4.86	125	126	2.64	72	29	AIR FLUID LEVELS	DILATED GUT LOOPS	
87	14.1	1.2	100	126	4.57	74	192	3.57	74	46	PNEUMOPERITONEUM		
88	12.4	1.14	98	134	3.12	101	36	0.97	74	32			
89	15.3	1.4	91	134	3.88	98	0.59	29	32	75		DILATED GUT LOOPS	
90	17	1.55	95	139	4.16	104	20	0.95	53	33	PNEUMOPERITONEUM		
91	17.1	1.6	99	140	3.85	103	20	0.61	68	34			
92	15.8	1.44	92	135	4.62	94	46	1.53	55	26			MILD ASCITES
93	14.9	1.36	170	138	3.7	100	67	1.61	61	33	PNEUMOPERITONEUM		
94	17.2	1.56	92	150	3.86	106	57	2.54	197	54			
95	22.6	2	56	149	3.91	115	54	1.53	66	55	PNEUMOPERITONEUM		
96	14.4	1.3	81	141	5.29	112	145	5.15	67	31	PNEUMOPERITONEUM		
97	16.2	1.48	171	146	4.31	105	87	2.81	109	17	PNEUMOPERITONEUM		MODERATE FREE FLUID SEEN IN PERITONEAL CAVITY
98	18.4	1.68	83	141	3.65	102	17	0.5	73	32	PNEUMOPERITONEUM		
99	13.4	1.23	195	179	4.59	76	76	2.46	26	45	PNEUMOPERITONEUM		
100	16.7	1.53	132	139	3.46	107	9	0.8	80	35			

SR NO.	CECT W/A	MPI AGE >50 YEARS	MPI FEMALE GENDER	MPI ORGAN FAILURE	MPI MALIGNANCY	MPI PERITONITIS >24 HOURS	MPI ORIGIN OF SEPSIS NOT COLONIC	MPI DIFFUSED GENERALIZED PERITONITIS	MPI FLUID ANALYSIS CLEAR	MPI FLUID ANALYSIS CLOUDY/PURULENT	MPI FLUID ANALYSIS FAECAL	MPI SCORE	MPI CATEGORY. A/B/C
78		NO	NO	NO	NO	YES	YES	YES	NO	PURULENT		20	A
79		YES	NO	NO	NO	YES	YES	YES	NO	PURULENT		25	B
80		NO	NO	NO	NO	YES	YES	YES	NO		FAECAL	26	B
81		NO	YES	NO	NO	YES	YES	YES	NO	PURULENT		25	B
82	EVIDENCE OF CIRCUMFERENTIAL WALL THICKENING INVOLVING A SHORT SEGMENT OF DISTAL ILEAL LOOP WITH ABRUPT CHANGE IN CALIBRE SUGGESTIVE OF STRICTURE	NO	YES	NO	NO	YES	YES	YES	NO	PURULENT		25	B
83		NO	NO	NO	NO	YES	YES	YES	NO	PURULENT		20	A
84	MODERATE ASCITES WITH PNEUMOPERITONEUM WITH OMENTAL THICKENING	NO	YES	NO	NO	YES	YES	YES	NO	PURULENT		25	B
85	MODERATE PNEUMOPERITONEUM WITH SIGNIFICANT ASCITES WITH LONG SEGMENT CIRCUMFERENTIAL WALL THICKENING INVOLVING TERMINAL ILEUM	NO	NO	YES	NO	YES	YES	YES	NO	PURULENT		27	B
86		NO	NO	YES	NO	YES	YES	YES	NO		FAECAL	32	C
87		NO	NO	YES	NO	YES	YES	YES	NO	PURULENT		27	B
88	SUGGESTIVE OF COMPLICATED APPENDICITIS WITH PERFORATION WITH SMALL LOCULATED COLLECTION I RIGHT ILIAC FOSSA WITH ADHESIONS	YES	NO	NO	NO	YES	YES	NO	NO	PURULENT		19	A
89		NO	NO	NO	NO	YES	YES	YES	NO	PURULENT		20	A
90		NO	NO	NO	NO	YES	YES	YES	NO	PURULENT		20	A
91	SMALL BOWEL OBSTRUCTION WITH MILD FREE FLUID IN PERITONEAL CAVITY	NO	NO	NO	NO	YES	YES	YES	NO	PURULENT		20	A
92	HOLLOW VISCUS PERFORATION FROM PELVIC ILEAL LOOPS	NO	NO	NO	NO	YES	YES	YES	NO		FAECAL	26	B
93		YES	YES	NO	NO	YES	NO	YES	NO		FAECAL	32	C
94	LOCULATED FLUID COLLECTION ADJACENT TO DISTAL JEJUNAL AND PROXIMAL ILEUM WITH HOLLOW VISCUS PERFORATION WITH SMALL BOWEL OBSTRUCTION	YES	NO	YES	NO	YES	YES	YES	NO	PURULENT		32	C
95		YES	YES	YES	NO	YES	YES	YES	NO		FAECAL	42	C
96		YES	NO	YES	NO	YES	YES	YES	NO	PURULENT		32	C
97		YES	NO	YES	NO	YES	NO	YES	NO		FAECAL	34	C
98	LARGE AMOUNT OF FREE FLUID SEEN IN PERITONEAL CAVITY WITH AIR FLUID LEVEL LIKELY INFECTIOUS PERITONITIS	NO	YES	NO	YES	YES	YES	YES	NO	PURULENT		25	B
99		YES	NO	YES	NO	YES	YES	NO	NO	PURULENT		26	B
100	DIVERTICULITIS INVOLVING OF THE DIVERTICULAR OUTPOUCHING FROM JEJUNUM WITH SMALL AIR CONTAINING COLLECTION SUGGESTIVE OF CONTAINED PERF	NO	YES	NO	NO	YES	YES	NO	NO	PURULENT		19	A

SR NO.	SITE OF PERFORATION	SURGICAL PROCEDURE PROPOSED	SURGICAL PROCEDURE EXECUTED	MORBIDITY A. WOUND INFECTION	MORBIDITY B. WOUND DEHISCENCE	MORBIDITY C. REOPERATION	MORBIDITY D. INTRAABDOMINAL COLLECTION	MORBIDITY E. ANASTOMOTIC LEAK	MORBIDITY F. DIALYSIS
78	ILEAL PERFORATION	EXPLORATORY LAPAROTOMY	EXPLORATORY LAPAROTOMY WITH PRIMARY REPAIR OF ILEAL PERFORATION WITH LOOP ILEOSTOMY	NO	NO	NO	NO	NO	NO
79	ILEAL PERFORATION	EXPLORATORY LAPAROTOMY	EXPLORATORY LAPAROTOMY WITH ILEAL RESECTION AND END TO END ANASTOMOSIS	YES	NO	NO	NO	NO	NO
80	ILEAL PERFORATION	EXPLORATORY LAPAROTOMY	EXPLORATORY LAPAROTOMY WITH LOOP ILEOSTOMY	YES	NO	NO	NO	NO	NO
81	ILEAL PERFORATION	EXPLORATORY LAPAROTOMY	EXPLORATORY LAPAROTOMY WITH PRIMARY REPAIR OF ILEAL PERFORATION WITH LOOP ILEOSTOMY	NO	NO	NO	NO	NO	NO
82	ILEAL PERFORATION	EXPLORATORY LAPAROTOMY	EXPLORATORY LAPAROTOMY WITH STRICTUROPLASTY WITH PROXIMAL LOOP ILEOSTOMY	NO	NO	NO	NO	NO	NO
83	ILEAL PERFORATION	EXPLORATORY LAPAROTOMY	EXPLORATORY LAPAROTOMY WITH PRIMARY REPAIR OF ILEAL PERFORATION WITH LOOP ILEOSTOMY	NO	NO	NO	NO	NO	NO
84	ILEAL PERFORATION	EXPLORATORY LAPAROTOMY	EXPLORATORY LAPAROTOMY WITH PRIMARY REPAIR OF ILEAL PERFORATION WITH LOOP ILEOSTOMY	NO	NO	NO	NO	NO	NO
85	JEJUNAL PERFORATION	EXPLORATORY LAPAROTOMY	EXPLORATORY LAPAROTOMY WITH JEJUNAL PERFORATION REPAIR WITH FEEDING JEJUNOSTOMY	NO	NO	NO	NO	NO	NO
86	ILEAL PERFORATION	EXPLORATORY LAPAROTOMY	EXPLORATORY LAPAROTOMY WITH PRIMARY REPAIR OF ILEAL PERFORATION WITH LOOP ILEOSTOMY	YES	NO	NO	NO	NO	NO
87	ILEAL PERFORATION	EXPLORATORY LAPAROTOMY	EXPLORATORY LAPAROTOMY WITH PRIMARY REPAIR OF ILEAL PERFORATION WITH LOOP ILEOSTOMY	NO	NO	NO	NO	NO	NO
88	APPENDICULAR PERFORATIION	DIAGNOSTIC LAP AND PROCEED	EXPLORATORY LAPAROTOMY WITH APPENDECTOMY	NO	NO	NO	NO	NO	NO
89	ILEAL PERFORATION	EXPLORATORY LAPAROTOMY	EXPLORATORY LAPAROTOMY WITH PRIMARY REPAIR OF ILEAL PERFORATION WITH LOOP ILEOSTOMY	NO	NO	NO	NO	NO	NO
90	ILEAL PERFORATION	EXPLORATORY LAPAROTOMY	EXPLORATORY LAPAROTOMY WITH RESECTION AND END TO END ANASTOMOSIS WITH MULTIPLE STRICTUROPLASTY WITH LOOP ILEOSTOMY	YES	NO	NO	NO	YES	NO
91	ILEAL PERFORATION	EXPLORATORY LAPAROTOMY	EXPLORATORY LAPAROTOMY WITH PRIMARY REPAIR OF ILEAL PERFORATION WITH LOOP ILEOSTOMY	YES	NO	NO	NO	NO	NO
92	ILEAL PERFORATION	EXPLORATORY LAPAROTOMY	EXPLORATORY LAPAROTOMY WITH ILEAL RESECTION AND END TO END ANASTOMOSIS WITH PROXIMAL LOOP ILEOSTOMY	YES	NO	NO	NO	NO	NO
93	SIMOID COLON PERFORATION	EXPLORATORY LAPAROTOMY	EXPLORATORY LAPAROTOMY WITH PRIMARY REPAIR OF SIGMOID PERFORATION WITH PROXIMAL LOOP ILEOSTOMY	YES	NO	NO	NO	NO	NO
94	APPENDICULAR PERFORATIION	EXPLORATORY LAPAROTOMY	EXPLORATORY LAPAROTOMY WITH APPENDECTOMY	YES	NO	NO	YES	NO	NO
95	ILEAL PERFORATION	EXPLORATORY LAPAROTOMY	EXPLORATORY LAPAROTOMY WITH PRIMARY REPAIR OF ILEAL PERFORATION WITH LOOP ILEOSTOMY	NO	NO	NO	NO	NO	NO
96	JEJUNAL PERFORATION	EXPLORATORY LAPAROTOMY	EXPLORATORY LAPAROTOMY WITH PRIMARY REPAIR OF JEJUNAL PERFORATION	NO	NO	NO	NO	N0	YES
97	COLONIC PERFORATION	EXPLORATORY LAPAROTOMY	EXPLORATORY LAPAROTOMY WITH EXTENDED RIGHT HEMICOLECTOMY WITH PROXIMAL LOOP ILEOSTOMY	NO	NO	NO	NO	NO	NO
98	ILEAL PERFORATION	EXPLORATORY LAPAROTOMY	EXPLORATORY LAPAROTOMY WITH RESECTION OF PATHOLOGICAL PROXIMAL ILEALSEGMENT WITH DOUBLE BARREL ILEOSTOMY	YES	YES	NO	NO	NO	NO
99	DUODENAL PERFORATION	EXPLORATORY LAPAROTOMY	EXPLORATORY LAPAROTOMY WITH MODIFIED GRAHAMS PATCH REPAIR WITH PERITONEAL DRAINAGE WITH PERITONEAL LAVAGE	NO	NO	NO	NO	NO	NO
100	JEJUNAL PERFORATION	DIAGNOSTIC LAP AND PROCEED	EXPLORATORY LAPAROTOMY WITH JEJUNAL DIVERTICULAR RESECTION WITH SIDE TO SIDE JEJUNAL ANASTOMOSIS	YES	NO	NO	NO	YES	NO

SR NO.	MORBIDITY G. MECHANICAL VENTILATION	MORBIDITY H. GCS<8	MORBIDITY I ICU STAY	MORBIDITY I ICU STAY (DAYS)	MORBIDITY J. HOSPITAL STAY (DAYS)	OUTCOME
78	NO	NO	N		11	DISCHARGE
79	YES	NO	Y	8	13	DISCHARGE
80	YES	NO	Y	8	13	DISCHARGE
81	NO	NO	Y	3	7	DISCHARGE
82	YES	NO	Y	11	19	DISCHARGE
83	NO	NO	N		9	DISCHARGE
84	NO	NO	N		10	DISCHARGE
85	YES	YES	Y	3	6	DISCHARGE
86	YES	NO	Y	11	14	DEATH
87	NO	NO	N		13	DISCHARGE
88	NO	NO	N		8	DISCHARGE
89	NO	NO	N		9	DISCHARGE
90	NO	NO	N		15	DISCHARGE
91	NO	NO	N		8	DISCHARGE
92	YES	YES	Y	16	17	DISCHARGE
93	YES	YES	Y	29	30	DEATH
94	YES	YES	Y	8	8	DEATH
95	YES	YES	Y	2	2	DEATH
96	YES	YES	Y	3	3	DEATH
97	YES	YES	Y	2	2	DEATH
98	NO	NO	Y	4	12	DISCHARGE
99	YES	YES	Y	2	2	DISCHARGE
100	NO	NO	N		17	DISCHARGE

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No. BFUHS/2K23p-TH/ 46 Date 1/1/24

The Principal
Dayanand Medical College & Hospital
Ludhiana

Subject:: **Approval of Plan of Thesis.**

This is to inform you that the Faculty of Medical Sciences in its meeting held on 25.09.2023 has approved the plan of thesis of **Arshdeep Singh Rekhi**, a student of your college for **MS General Surgery** along with the names of Supervisor/Co-Supervisor as under:-

Topic Plan of Thesis
Evaluation of Mannheim peritonitis index as predictor of outcome in patients with perforation peritonitis .

Supervisor	Co-Supervisor:-	Co-Supervisor:-
Dr. Prabhdeep Singh Nain	Dr. Ashish Ahuja	Dr. Varun Gupta
Professor	Professor	Assoc. Professor
Dept. of General Surgery,	Dept. of General Surgery	Dept. of General Surgery

The student may submit the thesis in triplicate alongwith the plan in triplicate also, to the Controlier of Examinations, BFUHS, Faridkot, at least six months before the commencement of theory examination, if he/she is otherwise eligible to take the examination. He /She may be directed to attach a photocopy of this letter with the forwarding letter while submitting thesis in the University along with the letter of approval of University for change of supervisor/Co-Supervisor, change of topic, if any.

Controller of Examinations

Note :

1. *If any discrepancy found regarding topic of thesis or Supervisor/Co-Supervisor, inform undersigned within one month after issue of this letter.*

EVALUATION OF MANNHEIM PERITONITIS INDEX AS PREDICTOR OF OUTCOME IN PATIENTS WITH PERFORATION PERITONITIS

THESIS PROPOSAL

FOR APPROVAL OF SUBJECT OF THESIS TO BE SUBMITTED

IN PARTIAL FULFILLMENT OF THE REQUIREMENTS

FOR THE DEGREE OF

MASTER OF SURGERY

IN

GENERAL SURGERY

OF THE

BABA FARID UNIVERSITY OF HEALTH SCIENCES

FARIDKOT

SEPTEMBER, 2022 **DR. ARSHDEEP SINGH REKHI**

DEPARTMENT OF GENERAL SURGERY

DAYANAND MEDICAL COLLEGE & HOSPITAL,

LUDHIANA.

ABSTRACT OF PLAN OF THESIS

Title	EVALUATION OF MANNHEIM PERITONITIS INDEX AS PREDICTOR OF OUTCOME IN PATIENTS WITH PERFORATION PERITONITIS
For the degree of	Master of Surgery
Name of the candidate	Dr. Arshdeep Singh Rekhi
Supervisor	Dr. Prabhdeep Singh Nain, Professor, Department of General Surgery, DMCH Ludhiana
Co-Supervisor	Dr. Ashish Ahuja Professor Department of General Surgery , DMCH, Ludhiana Dr. Varun Gupta Associate Professor Department of General Surgery , DMCH, Ludhiana
Institution	Dayanand Medical College and Hospital, Ludhiana
University	Baba Farid University of Health Sciences, Faridkot

Introduction: Peritonitis due to hollow viscus perforation continues to be one of the surgical emergencies which is considered to be the life threatening condition. Despite the surgical treatment, intensive care treatment and advancement in antibiotic therapy the mortality rates of perforation peritonitis are still high ranging from 5.6%-56%. Hence, early prognostic evaluation of abdominal sepsis is preferred to select high-risk patients for more aggressive therapeutic procedures and to classify the severity of the disease.

Aim of Study: To evaluate predictability of Mannheim Peritonitis Index in patients with perforation peritonitis

Materials & methods: A prospective observational study will be conducted at Dayanand Medical College and Hospital, Ludhiana, Punjab, India. A total of 100 patients will be recruited/enrolled for this study .These patients will be scored with MPI. The primary outcome studied will be in hospital death or discharge. The secondary outcome studied will be Morbidity in terms of local and systemic complications.

Clinical Significance: Peritonitis secondary to hollow viscus perforation is one of the commonest reasons for emergency surgery done even today. Effective preoperative management, timely surgery and proper post-operative care will decide the outcome. MPI is disease specific , easy scoring system for predicting the mortality in patients with perforation peritonitis

Keywords: prospective study, MPI, perforation peritonitis, outcomes.

(Signature)	(Signature)	(Signature)	(Signature)	(Signature)
Candidate	Co-supervisor	Co-supervisor	Supervisor	Principal

CERTIFICATE OF FACILITIES AVAILABLE

This is to certify that the facilities for work on the subject of thesis titled **"EVALUATION OF MANNHEIM PERITONITIS INDEX AS PREDICTOR OF OUTCOME IN PATIENTS WITH PERFORATION PERITONITIS"** exist in the Department of General Surgery at Dayanand Medical College and Hospital, Ludhiana and will be provided to the candidate. We will see that the data being included in the thesis are genuine and is collected by the candidate himself under our supervision and guidance.

Supervisor

Dr. Prabhdeep Singh Nain
Professor
Department of General Surgery
DMCH, Ludhiana

Co-Supervisors

Dr. Ashish Ahuja
Professor
Department of General Surgery
DMCH, Ludhiana

Dr. Varun Gupta
Associate Professor
Department of General Surgery
DMCH, Ludhiana

Head of the Department

Dr. Jaspal Singh
Professor & Head
Department of General Surgery
DMCH, Ludhiana

Place : _____

Date : _____

APPROVAL PROFORMA BY
RESEARCH & ETHICAL COMMITTEE
DAYANAND MEDICAL COLLEGE & HOSPITAL, LUDHIANA

Name of candidate	DR. ARSHDEEP SINGH REKHI
Department	General Surgery
Topic of Thesis	EVALUATION OF MANNHEIM PERITONITIS INDEX AS PREDICTOR OF OUTCOME IN PATIENTS WITH PERFORATION PERITONITIS
Likely date of appearing in PG examination	May/ June 2024
Date of enrollment	7th March 2022
Name of Head of Department	DR. JASPAL SINGH
1) Supervisor **2) Co-Supervisor**	DR. PRABHDEEP SINGH NAIN DR. ASHISH AHUJA DR. VARUN GUPTA
Signature of Members of Research Committee with Stamp	**Signature of Members of Ethics Committee with Stamp**
Dr. Harpreet Kaur (Professor & Head, Pathology)	Mr. R K Sharma (Legal Expert)
Dr. Jaspal Singh (Professor & Head, Surgery)	Dr. Ramit Mahajan (Associate Professor, Gastroenterology)
Dr. Dinesh Gupta (Professor & Head, Medicine)	Dr. Anu Sharma (Professor, Anatomy)
Dr. Sandeep Kaushal (Dean Academics & Professor & Head, Pharmacology)	Dr. Sandeep Kaushal (Dean Academics & Professor & Head, Pharmacology)
Dr. Gurpreet S Wander (Vice Principal)	Dr. Gurpreet S Wander (Vice Principal & Professor & Head, Cardiology)
	Dr. Gagandeep Singh (Secretary, Ethics Committee Professor & Head, Neurology)

Approved: Yes / ~~No~~

Dr. Sandeep Puri
Chairperson
Research Committee

Chairperson
Research Committee

Approved: Yes / ~~No~~

Prof. Arvind Malhotra
Chairperson
Ethics Committee

Chairperson
Ethics Committee

BABA FARID UNIVERSITY OF HEALTH SCIENCES, FARIDKOT

PROFORMA FOR REGISTRATION OF SUBJECT FOR DISSERTATION

1	NAME OF THE CANDIDATE AND ADDRESS	DR. ARSHDEEP SINGH REKHI #4 STREET NO. 2 TEG COLONY , PATIALA , PUNJAB (147001)
2	NAME OF THE INSTITUTE	DAYANAND MEDICAL COLLEGE AND HOSPITAL,LUDHIANA
3	COURSE OF STUDY AND SUBJECT	MS, GENERAL SURGERY
4	DATE OF ADMISSION OF COURSE	MARCH 7,2022
5	TITLE OF THE TOPIC	EVALUATION OF MANNHEIM PERITONITIS INDEX AS PREDICTOR OF OUTCOME IN PATIENTS WITH PERFORATION PERITONITIS

6. BRIEF RESUME OF THE INTENDED WORK

6.1 NEED FOR THE STUDY

Early prognostic evaluation is desirable to be able to select high-risk patients for more aggressive treatment, especially in severe peritonitis. The prognosis and outcome of peritonitis depends upon the interaction of many factors including patient-related factors, disease-specific factors and diagnostic and therapeutic interventions. Categorizing patients into different risk groups would help prognosticate the outcome, select patients for intensive care and determine operative risk, thereby helping to choose the nature of the operative procedure, e.g. damage control vs. definitive procedure.[1]

The Mannheim peritonitis index provides an easy and reliable means of risk evaluation and classification for patients with peritoneal inflammation.[2] Early evaluation of severity of lesion using MPI allows us to estimate the possibility of patient survival .various authors have reported that MPI provides more reliable means of risk evaluation and prognosis

MPI SCORE

AGE >50	5
FEMALE GENDER	5
ORGAN FAILURE	7
MALIGNANCY	4
PREOPERATIVE DURATION OF PERITONITIS >24	4
ORIGIN OF SEPSIS NON COLONIC	4
DIFFUSE GENERALIZED PERITONITIS	6
PERITONEAL FLUID ANALYSIS	CLEAR 0 CLOUDY/PURULENT 6 FECAL 12

CRITERIA FOR ORGAN FAILURE

ORGAN	CRITERIA
KIDNEY : CREATININE LEVEL UREA LEVEL OLIGURIA	 >177 MICROMOLE/LITRE (>2.31MG/100ML) >167 MMOL/LITRE (>467.78MG/100ML) <20ML/HOUR
LUNGS: PAO2 PACO2	 <50 MMHG >50MMHG
SHOCK	HEMODYNAMIC HYPER DYNAMIC
INTESTINAL OBSTRUCTION (ONLY IF PROFOUND)	WITH PARALYTIC ILEUS >24HOURS OR COMPLETE MECHANICAL OBSTRUCTION

The aim and objective of the present study is to evaluate the usefulness and severity of MPI Score in the prediction of outcome in perforation peritonitis and thus decision making in perforation peritonitis.

A scoring system which can compare patient populations and severity of illness, objectively predict mortality, morbidity and can help to evaluate the treatment strategy is the dire need for evaluative research of intensive care. Keeping in mind that perforation peritonitis is the commonest surgical emergency in the lower rungs of the society which we encounter in our hospital, this study will be undertaken to evaluate Mannheim Peritonitis Index (MPI) scoring system in defining the prognosis of the patients and to be able to deliver better patient care and furnish efficient management. MPI only requires information routinely found in surgical registers. It takes into account age, gender, organ failure, cancer, and duration of peritonitis, involvement of colon

and extent of spread and character of peritoneal fluid. Peritonitis due to perforation of gastro intestinal viscus is the most common surgical emergency in India. Despite advances in surgical techniques, antimicrobial therapy and intensive care support, management of peritonitis continues to be highly demanding, difficult and complex and the spectrum of disease is different from that found in the western world. Keeping in mind that perforation peritonitis is the commonest surgical emergency in the lower rungs of the society which we encounter in our hospital, this study will be undertaken to evaluate Mannheim Peritonitis Index (MPI) scoring system in defining the prognosis of the patients and to be able to deliver better patient care and furnish efficient management.[3]

6.2 REVIEW OF LITERATURE

The outcome of surgical intervention; whether death or uncomplicated survival, complications or long term morbidity is not solely dependent on the abilities of the surgeon in isolation. The patient's physiological status, the disease that requires surgical correction, the nature of the operation and the pre operative and post operative support services have a major effect on the ultimate outcome.[4] The systematic approach to quantifying illness in critically ill patients like peritonitis is a recent phenomenon.[5] Early and objective classification of the severity of peritonitis may help in selecting patients for aggressive surgical approach.

In a research, Ajaz Ahmed and colleagues (Mannheim Peritonitis Index and APACHE-II-prediction of outcome in patients with perforation peritonitis) The patients were classified into three groups based on their MPI scores: MPI scores of 15 or less, 16 to 25, and 25 or more. The difference between the groups was statistically significant (p 0.05), with the total mean MPI score for survivors being 18.4 (interquartile range: 10-31) and the mean score for non-survivors being 32.12 (interquartile range: 31-47). Patients with scores under 15 did not pass away. For the 75 patients scoring 16-25, the mortality was 4%, but the rate increased to 82.3% when the score was more than 25. While studying the individual mortal- ity rates based upon the etiology, it was noted that all patients with colonic perforations had high MPI scores (>25) and a high mortality.[6]

MPI scores were split into three groups by Rajesh Sharma et al. in their study: 15 (category 1), 16–25 (category 2), and >25 (category 3). (category 3). In MPI category 3, the death rates were greater. It was shown that the difference in mortalities between MPI score groups was significantly significant (P 0.0001).[7]

In their study entitled "MANNHEIM PERITONITIS INDEX AS AN EVALUATIVE TOOL IN PREDICTING MORTALITY IN PATIENTS OF PERFORATION PERITONITIS," Batra et al. discovered that patients

with an MPI score of 20 or less had a 0% mortality rate, those with a score of 21 to 29 had a 3.85% mortality rate, and those with a score of 30 or higher had a 20% mortality.[3]

The effectiveness of the Mannheim Peritonitis Index (MPI) Score in Patients with Secondary Peritonitis was studied by Muralidhar et al. On 50 patients, a prospective research was done. From November 2011 to May 2013, a prospective research including 50 patients was carried out at the JSS Medical College Hospital in Mysore, Karnataka, India. Predictions were divided into three groups: I score 20, ii) score 21–29, and iii) score 30. As and when required, further resuscitation and ICU care were provided. Postoperatively, patients were monitored until the result, such as death, morbidity, or discharge. In this study, the survival rate was 95% for MPI scores under 20, 86% for MPI scores between 21 and 29, and only 50% for MPI scores beyond 30.[8]

Another study conducted by Sanjeev Sharma et al on fifty cases with diagnosis of peritonitis coming to Government Medical College, Amritsar found that Mortality steadily increases with increase in MPI score. For patients with a score <21, the mortality rate was 0%; for score 21–27, it was 27.28%; and for score >27, it was 100% (P < 0.001). For patients with a score <21, the morbidity rate was 13.33%; for score 21–27, it was 65.71%; and for score >27, it was 100% (P < 0.001). This study proved that MPI scoring system is a simple and effective tool for assessing the morbidity and mortality in patients with peritonitis.[9]

Patients with MPI 0-10 and 11-20 did not experience any mortality, according to a study by Anand Mishra et al. Seven (22.5%) patients out of 31 with a score of 21 to 30 died. In contrast, a total of 22 (50.0%) patients out of 44 patients with MPI >30 passed away. Higher MPI scores were significantly associated with mortality (p 0.001) after statistical analysis of the data.[10]

In their study, Paul TriniTy Stephen et al. reached the conclusion that patients with peritonitis had a considerably higher MPI Score. 47 was the maximum score. Patients with MPI scores of greater than 27 had an increased risk of wound infection, wound dehiscence, reoperation, intra abdominal collection, anastomotic leak, dialysis, and mechanical ventilation lasting longer than 48 hours.[11]

In a study titled "Prediction of outcome using the Mannheim Peritonitis Index," Billing A et al. found that the mean death rate for patients with a score under 21 was 23% (range 0–11%), for scores between 21 and 29, 22.5% (range 10–6–50%), and for scores beyond 29, 59.1% (range 41–87%). The average index score and average death rate were associated among the several groups, indicating a uniform approach to peritonitis treatment. The Mannheim peritonitis index provides an easy and reliable means of risk evaluation and classification for patients with peritoneal inflammation.[3]

In their study (Evaluation of Mannheim Peritonitis Index and Multiple Organ Failure Score in Patients with Peritonitis), Notash AY et al. prospectively assessed the MPI and MOF score in 80 consecutive patients with peritonitis who had the same surgical therapy. For the MPI and other patient variables, risk ratios were calculated. The MOF score could not be calculated with a risk ratio. Overall in-hospital mortality rate was 17.5%, including 80% of patients with MPI>29. In non-survivors the mean score was 4.8 (SD 1.46) and 33.07 (4.81) for the MOF score and MPI, respectively. Survivors had mean MOF score of 0.28 (0.20) and mean MPI of 19.39 (6.68). Their conclusion was that the MPI and MOF score provide simple and objective means to predict the outcome of patients with peritonitis.[12]

3. AIMS AND OBJECTIVES OF THE STUDY

- To evaluate predictability of Mannheim Peritonitis Index in patients with perforation peritonitis.

7.0 MATERIALS AND METHODS

7.1 SOURCE OF DATA

The prospective observational study will be conducted in the Department of General Surgery at Dayanand Medical College and Hospital, Ludhiana, Punjab, India. 100 patients will be enrolled in the study. Patients presenting in Department of Surgery through emergency with perforation will be enrolled in the study.

7.2 METHOD OF COLLECTION OF DATA

The prospective observational study will be conducted in the Department of General surgery at Dayanand Medical College and Hospital, Ludhiana, Punjab, India. Ethical clearance will be obtained from institutional research board . Sample size will be 100 patients**.** Patients presenting in Department or Emergency ward with clinical features of perforation peritonitis after clinical radiological evaluation will be enrolled in the study. . Perforation will be diagnosed either by Xray Abdomen (supine & erect), USG abdomen, CECT Abdomen, or clinical evaluation.

1. **INCLUSION CRITERIA**:- Patients having >18years of age with diagnosis of perforation peritonitis.

2. **EXCLUSION**:-
    1. Patients with age less than <18 years
    2. Patients not undergoing Surgery
    3. Primary peritonitis.

All patients admitted will be thoroughly investigated and with proper informed and written consent. Preoperative blood work-up including CBC, ABG will be done. Radiological investigations including X-ray Abdomen (erect &supine), USG whole abdomen, CECT abdomen will also be done . Appropriate, adequate intravenous fluid therapy will be started for resuscitation, and empirical broad-spectrum antibiotics will be given. If on examination finding of tenderness and guarding rigidity are observed nasogastric tube decompression will be done. Patients will be catheterised to monitor urine output. All patients will undergo emergency exploratory laparotomy and surgical procedures performed will depend on operative findings and surgeons choice as no guidelines could be laid down due to varied aetiologies.

The patients will be scored using MPI scoring system at admission or within 24hrs. MPI will be applied along with other clinical and biochemical parameters recorded in pre structural proforma . If the blood parameter are tested more then once the most deranged value will be used for scoring. Prediction will be categorised into 3 groups :

- Score≤20- CATEGORY A
- Score 21-29- CATEGORY B
- Score ≥30 - CATEGORY C

NUMBER OF CASES: 100

OUTCOME: Utility of Mannheim Peritonitis Index in predicting outcome in patients with perforation peritonitis .

STATISTICAL ANALYSIS

Data will be described in terms of range; mean ±standard deviation (± SD), median, frequencies (number of cases) and relative frequencies (percentages) as appropriate. For comparing categorical data, Chi square ($\chi 2$) test will be performed and fisher exact test will be used when the expected frequency is less than 5. A probability value

(p value) less than 0.05 will be considered statistically significant. All statistical calculations will be done using (Statistical Package for the Social Science) SPSS 21version (SPSS Inc., Chicago, IL, USA) statistical program for Microsoft Windows.

7.3 DOES THE STUDY REQUIRE ANY INVESTIGATIONS OR INTERVENTIONS TO BE CONDUCTED ON PATIENTS OR OTHER HUMANS OR ANIMALS? IF SO, PLEASE DESCRIBE BRIEFLY.

Yes

7.4 HAS ETHICAL CLEARANCE BEEN OBTAINED FROM YOUR INSTITUTION IN CASE OF 7.3?

Yes, Attached herewith.

8. LIST OF REFERENCES

1. Sutar MA, Yaradhimmaiah R, Arshi NI. Evaluation of Mannheim Peritonitis Index (MPI) scoring system in prognosis of patients with peritonitis due to hollow viscous perforation. Journal of Evolution of Medical and Dental Sciences. 2016;5:1626-31.
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7. Sharma R, Ranjan V, Jain S, Joshi T, Tyagi A, Chaphekar R. A prospective study evaluating utility of Mannheim peritonitis index in predicting prognosis of perforation peritonitis. Journal of Natural Science, Biology, and Medicine. 2015 Aug;6(Suppl 1):S49.
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9. Sharma S, Singh S, Makkar N, Kumar A, Sandhu MS. Assessment of severity of peritonitis using mannheim peritonitis index. Nigerian Journal of Surgery. 2016;22:118-22.
10. Mishra A, Singh KK, Jain V. A comparative analysis between Mannheim peritonitis score and acute physiological and chronic

health evaluation II score in predicting prognosis of patients of perforation peritonitis.

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12. Notash AY, Salimi J, Rahimian H, Fesharaki MS, Abbasi A. Evaluation of Mannheim peritonitis index and multiple organ failure score in patients with peritonitis. Indian journal of gastroenterology. 2005;24:197.

PROFORMA SR NO.

NAME :_____ AGE :_____ SEX : _____

MRD NO.: _____ DATE OF ADMISSION :_____

H/O PRESENT ILLNESS: SYMPTOMS AND DURATION

SYMPTOMS DURATION

1. PAIN ABDOMEN. [___]
2. VOMITING. [___]
3. ABDOMINAL DISTENSION[___]
4. CONSTIPATION[___]
5. FEVER[___]

PER ABDOMINAL EXAMINATION:

1. GUARDING [___]
2. TENDERNESS [___]
3. RIGIDITY [___]

VITALS AT THE TIME OF ADMISSION

1. BODY TEMPERATURE-
2. HEART RATE-
3. RESPIRATORY RATE-
4. BLOOD PRESSURE –
5. Spo2 –

SIGNATURE OF CANDIDATE SIGNATURE OF SUPERVISOR

PROFORMA SR NO.

BLOOD INVESTIGATIONS

HB	
TLC	
PTI/INR	
RBS	
S. ELECTROLYTES	
BLOOD UREA	
S. CREATININE	
Pao2	
Paco2	

RADIOLOGICAL INVESTIGATIONS

XRAY ABDOMEN:	ERECT SUPINE
USG WHOLE ABDOMEN	
CECT ABDOMEN	

SIGNATURE OF CANDIDATE SIGNATURE OF SUPERVISOR

PROFORMA SR NO.

MPI SCORE

CRITERIA	SCORE	YES/NO
AGE >50 YEARS	5	
FEMALE GENDER	5	
ORGAN FAILURE	7	
MALIGNANCY	4	
PREOPERATIVE DURATION OF PERITONITIS >24 HOURS	4	
ORIGIN OF SEPSIS NOT COLONIC	4	
DIFFUSE GENERALIZED PERITONITIS	6	
PERITONEAL FLUID ANALYSIS	CLEAR 0 CLOUDY/PURULENT 6 FAECAL 12	
TOTAL CALCULATED SCORE		

CATEGORY A[____] B[____] C[___]

SITE OF PERFORATION

PEPTIC ULCER PERFORATION	
GASTRODUODENAL PERFORATION (OTHER THAN PEPTIC)	
APPENDICULAR PERFORATION	
SMALL BOWEL PERFORATION	
COLONIC PERFORATION	
GALL BLADDER PERFORATION	
MISCELLANEOUS	

SIGNATURE OF CANDIDATE SIGNATURE OF SUPERVISOR

PROFORMA SR NO.

SURGICAL PROCEDURE PROPOSED	SURGICAL PROCEDURE EXECUTED

MORBIDITY

WOUND INFECTION	
WOUND DEHISCENCE	
REOPERATION	
INTRAABDOMINAL COLLECTION	
ANASTOMOTIC LEAK	
DIALYSIS	
MECHANICAL VENTILATION	
GCS<8	
ICU STAY (DAYS)	
HOSPITAL STAY (DAYS)	

FINAL OUTCOME

1. DISCHARGE : [__]
2. DEATH: [__]
3. DISCHARGE AGAINST MEDICAL ADVICE : [__]

SIGNATURE OF CANDIDATE SIGNATURE OF SUPERVISOR

INFORMED PATIENT CONSENT

Date: _____

I…….D/o, W/o, S/o……..…… am willing to participate in the study **"EVALUATION OF MANNHEIM PERITONITIS INDEX AS PREDICTOR OF OUTCOME IN PATIENTS WITH PERFORATION PERITONITIS"** The procedure with its complications has been explained to me in local vernacular language. I have fully understood that no special tests and extra expenditure in any form, merely for the purpose of thesis is being carried out. I am free to opt out the study any time without assigning any reason.

……. ……
Signature of the Witness Signature of the patient

Name:

Signature of Candidate **Signature of Supervisor**

मरीज अनुमति फार्म

तिथि _____

मैं _____ पत्नी/पुत्र/पुत्री _____

निवासी _____

इस शोधकार्य "**EVALUATION OF MANNHEIM PERITONITIS INDEX AS PREDICTOR OF OUTCOME IN PATIENTS WITH PERFORATION PERITONITIS"** में भाग लेने के लिए सहमत हूँ। मैं इस शोधकार्य में भाग लेने के लिए अपनी स्वेच्छा से तैयार हूँ। मैं पुष्टि करता/करती हूँ की यह स्वीकृति देने के लिए मुझे कोई आर्थिक प्रलोभन नहीं दिया गया और न ही दबाव डाला गया है। मुझे इस शोधकार्य का उद्देश्य स्पष्ट कर दिया गया है और मुझे यह विश्वास है की यह विज्ञान और मानवता के लाभ के लिए है। मुझे इस शोधकार्य में होने वाले जोखिम के बारे में समझा दिया गया है और मेरी समझ में यह जोखिम बहुत मामुली है।

मैं इस शोधकार्य में भाग लेने के सम्बन्ध में किसी भी समय अपनी अस्वीकृति व्यक्त कर सकता/सकती हूँ और मेरे अस्वीकृति व्यक्त करने का मेरे इलाज पर कोई प्रभाव नहीं पड़ेगा।

_____ _____

गवाह के हस्ताक्षर रोगी के हस्ताक्षर/अंगूठे का निशान

नाम: नाम:

_____

अन्वेषक के हस्ताक्षर

_____

विद्यार्थी के हस्ताक्षर

ਮਰੀਜ਼ ਰਜ਼ਾਮੰਦੀ ਫਾਰਮ

ਮਿਤੀ_____

ਮੈ_____ਪਤਨੀ/ਪੁੱਤਰ/ਪੁੱਤਰੀ_____

ਵਾਸੀ _____

“EVALUATION OF MANNHEIM PERITONITIS INDEX AS PREDICTOR OF OUTCOME IN PATIENTS WITH PERFORATION PERITONITIS” ਤੇ ਚਲ ਰਹੀ ਖੋਜ ਵਿਚ ਹਿੱਸਾ ਲੈਣ ਲਈ ਰਜ਼ਾਮੰਦ ਹਾਂ। ਇਸ ਖੋਜ ਕੰਮ ਵਿਚ ਹਿੱਸਾ ਲੈਣ ਲਈ ਮੈ ਆਪਣੀ ਮਰਜ਼ੀ ਨਾਲ ਤਿਆਰ ਹਾਂ। ਮੈ ਇਹ ਦਸਣਾ ਚਾਹੁੰਦਾ ਹਾਂ/ ਚਾਹੁੰਦੀ ਹਾਂ ਕੇ ਇਹ ਰਜ਼ਾਮੰਦੀ ਦੇਣ ਵਾਸਤੇ ਮੈਨੂ ਕਿਸੇ ਵੀ ਤਰਾਂ ਦਾ ਲੋਭ-ਲਾਲਚ ਨਹੀ ਦਿੱਤਾ ਗਿਆ ਅਤੇ ਨਾ ਹੀ ਕੋਈ ਦਬਾ ਪਾਇਆ ਗਿਆ ਹੈ। ਮੈਨੂ ਇਸ ਖੋਜ ਦਾ ਮਨੋਰਥ ਸਮਝਾ ਦਿੱਤਾ ਗਿਆ ਹੈ ਅਤੇ ਮੈਨੂ ਇਹ ਭਰੋਸਾ ਦਵਾਇਆ ਗਿਆ ਹੈ ਕੇ ਇਹ ਖੋਜ ਵਿਗਿਆਨ ਅਤੇ ਮਾਨਵਤਾ ਦੀ ਭਲਾਈ ਲਈ ਹੈ। ਮੈਨੂ ਇਸ ਖੋਜ ਵਿਚ ਹੋਣ ਵਾਲੇ ਖਤਰੇ ਬਾਰੇ ਸਮਝਾ ਦਿੱਤਾ ਗਿਆ ਹੈ ਅਤੇ ਮੈਨੂ ਇਹ ਯਕੀਨ ਹੈ ਕੇ ਇਹ ਖਤਰਾ ਬਹੁਤ ਮਾਮੂਲੀ ਹੈ। ਮੈਨੂ ਇਸ ਖੋਜ ਕੰਮ ਵਿਚ ਹਿੱਸਾ ਲੈਣ ਦਾ ਢੰਗ – ਤਰੀਕਾ ਸਮਝਾ ਦਿੱਤਾ ਗਿਆ ਹੈ।

ਮੈ ਇਸ ਖੋਜ ਕੰਮ ਵਿਚ ਹਿੱਸਾ ਲੈਣ ਬਾਰੇ ਆਪਣੀ ਰਜ਼ਾਮੰਦੀ ਕਿਸੇ ਵੀ ਸਮੇ ਵਾਪਸ ਲੈ ਸਕਦਾ ਹਾਂ/ ਸਕਦੀ ਹਾਂ ਅਤੇ ਮੇਰੀ ਰਜ਼ਾਮੰਦੀ ਵਾਪਸ ਲੈਣ ਦਾ ਮੇਰੇ ਇਲਾਜ ਤੇ ਕੋਈ ਅਸਰ ਨਹੀ ਹੋਵੇਗਾ।

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ਗਵਾਹ ਦੇ ਹਸਤਾਖਰ ਮਰੀਜ਼ ਦੇ ਹਸਤਾਖਰ

ਮਿਤੀ_____ ਮਿਤੀ_____

ਪਤਾ _____ ਪਤਾ _____

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ਨਿਰੀਖਕ ਦੇ ਹਸਤਾਖਰ

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ਸਿਖਿਆਰਥੀ ਦੇ ਹਸਤਾਖਰ